NATIONAL CAR BUILDER

VOLUME XIII.
NUMBER 9.

DEVOTED TO THE INTERESTS OF RAILWAY ROLLING STOCK.

$1.00 PER ANNUM
SINGLE NUMBERS, TEN CENTS.

NEW YORK
Morse Building, 140 Nassau St.

SEPTEMBER, 1882.
Entered at the Post Office at New York N. Y., as Mail Matter of the Second Class.

CHICAGO:
144 N. Clark Street

GROUND TRIPOLI,

THE BEST THING KNOWN FOR CLEANING AND POLISHING THE

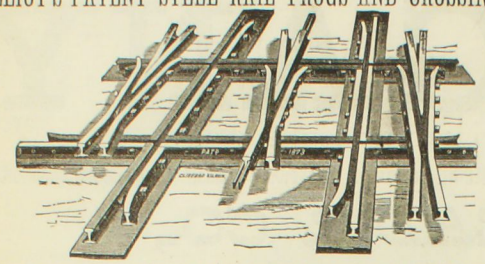
METAL WORK on LOCOMOTIVES and CARS.

That manufactured by us is warranted not to scratch, and has been used for several years by the principal Railroad Companies and by Fire Departments generally, and is highly recommended by them. Send for sample.

GEORGIA MINING & MANUFACTURING CO.,

MINES AND MILL, DALTON, Ga. 134 WATER STREET, NEW YORK.

ELLIOT'S PATENT STEEL RAIL FROGS AND CROSSINGS.



These Frogs and Crossings are made of steel rail, combined with a wrought-iron frame, and bound together transversely with strong bolts, which gives them great strength and durability without destroying their elasticity. They are connected at all ends by Fish-Plate Joints, and lie on the same tie surface as the running rail without any cutting of ties, thus saving a great deal of time and labor in putting in place on track.

Manufactured by H. & H. ELLIOT,
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GEORGIA PINE LUMBER AND TIMBER,

Mahogany, Walnut, Oak, Ash, Poplar and other woods for Manufacturers, Railroads and Car-Builders.

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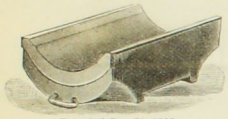

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CHEAP AND PRACTICAL

NO CUT JOURNALS.

Better than Bronze or Brass of any kind.

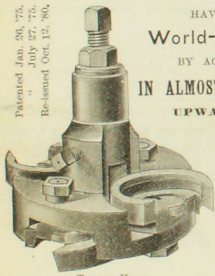
Strong, Durable, Tough and Pliable.

THEY FIT THE JOURNAL AND RUN COOL.

We guarantee our Bearings to give satisfaction in every particular. Send for descriptive circular.

G. J. SHIMER & CO., - - Freemansburg, Pa.

THE SHIMER MATCHING HEADS.



Patented Jan. 20, '75. July 27, '75. Re-issued Oct. 12, '80.

TONGUE HEAD.

HAVE BEEN AWARDED A

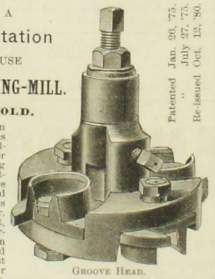
World-Wide Reputation

BY ACTUAL EVERY-DAY USE

IN ALMOST EVERY PLANING-MILL.

UPWARDS OF 9,000 SOLD.

The bits arranged in upper and lower series are secured to seats alternately inclined for the purpose of giving clearance to their cutting points—a feature peculiar to this head and the strong hold of its claim to public favor. Positively the lightest, strongest and most durable matching head in the world. Warranted to work the hardest cross-grained lumber with the greatest ease, and not chip up the edges. Send for descriptive circular,



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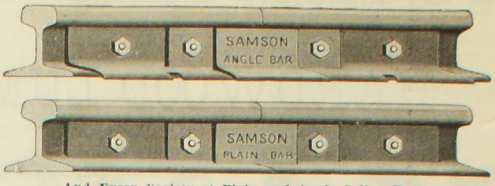
GROOVE HEAD.

SHIMER & CO., - - - - MILTON, PA.

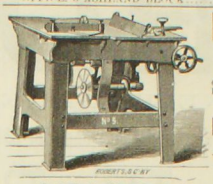
CHICAGO SPLICE BAR MILL.

MORRIS SELLERS & CO., Sole Proprietors and Manufacturers of the Celebrated "SAMSON" BAR



And Every Variety of Plain and Angle Splice Bars.

OFFICE, 6 ASHLAND BLOCK..... Mill, Chicago Ave. and the River..... CHICAGO.



No. 3 Wardwell Saw Bench.

Do not buy until you send for new descriptive list, stating just what you want inclosing stamp.

ROLLSTONE MACHINE CO.

Wardwell Saw Benches a specialty.

These machines are in use in the car shops of the Penn. R. R., B. & O., P. W. & B. R. & A. F. R., Mich. Central, and some fifty other of the largest shops in the country

Also, A HEAVY BAND SAW FOR CAR WORK.

ROTARY, STATIONARY, BED & BUZZ PLANERS,

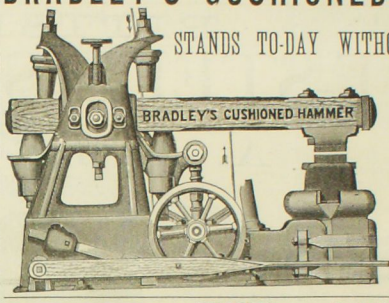
And a large number of other machines for car work.

We are dealers in all kinds of Second-Hand Machinery, Engines, Boilers, Iron and Wood-Working Machinery.

ROLLSTONE MACHINE CO., 131 WATER ST., FITCHBURG, MASS.

BRADLEY'S CUSHIONED HAMMER

STANDS TO-DAY WITHOUT AN EQUAL.

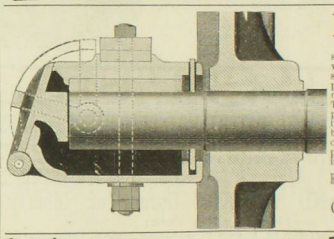


It approaches nearer the action of the Smith's arm than any hammer in the world.

BRADLEY & CO.,

Syracuse, N. Y.

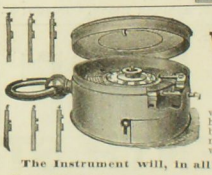
[Established 1832.]



RAOUL JOURNAL BOX.

This box is designed to provide an end stop for the axle, and thereby dispense with the shoulder and collar, and at the same time not obstruct the process of packing the box. The journal may be made any desired length and diameter. The life of the axle is doubled. The expense of brasses and lubricants enormously reduced; end wear of brasses and hot-boxes obviated. It is now in successful operation on trucks of engines, tenders, passenger and freight cars. For further information address

RAMAPO WHEEL & FOUNDRY COMPANY
Ramapo, N. Y.;
Columbus Iron Works Company
Columbus, Ga.



BUERK'S

Watchman's Time Detector

Important for all Large Corporations and Manufacturing Concerns.

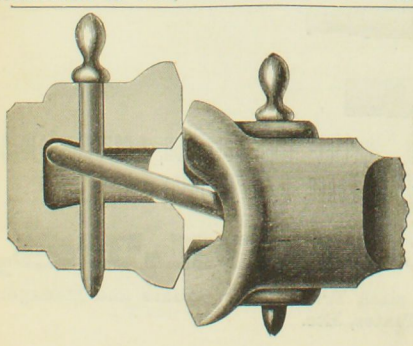
Capable of controlling with the utmost accuracy the motion of a watchman or patrolman as the same reaches different stations of his beat. The instrument is complete in itself, portable and as reliable as the best lever watch. It requires no fixture or wires communicating from room to room, as is the case with ordinary watch clocks.

The Instrument will, in all Cases, be Warranted Perfect and Satisfactory

The appeal of Imhaeuser against the decision of the Circuit Court of the United States, Southern District of New York, for infringing on my patent, was decided against him, at the last term of the Supreme Court of the United States, at Washington, D. C.

J. E. Buerk, Proprietor, No. 230 Washington Street, Boston.

P. O. BOX 979. ☞In sending for circular or ordering the above please mention this paper



SAFFORD'S SAFETY DRAW-BAR.

"VICTORY OVER MORE THAN 30 CONTESTANTS."

Victory over more than 30 Self-Couplers in the Master Car-Builder's Convention of June, 1876. Also indorsement for safety in coupling by the Yard Masters, in their Convention, June, 1877, and by 300 others who were unable to attend the Convention, and 300 railroad officials who are resident in 26 States, and who admitted superiority over any other yet produced. Try 30 free of royalty, and see for yourself! Pattern free, and no change in timbers or connections. Those made by Wilson, Walker & Co., Pittsburgh, Pa., *will save 200 per cent. in repairs*, and give double life service over *old styles of* wrought iron. About 43,000 in use by 146 railroads. The *saving in repairs* by using *my invention* is from 20 per cent. to 80 per cent. as per *report of many officers.*

J. B. SAFFORD,

EAGLE IRON WORKS,

BUFFALO, N. Y.

NATIONAL RAILWAY

PATENT WASTE COMPANY.

The most economical, efficient and desirable material for packing JOURNAL BOXES of CARS is Cotton Seed Hulls.

The company proposes to license railroads to use this valuable article for packing, on very liberal terms

Send for circular to

H. W. GUERNSEY, President,
240 Broadway, New York.

VENEERS. 24 SAMPLES FINE WOODS, NINE CENTS.

Any one who works in wood will find these Prepared Veneers not only cheap, but beautiful and durable and easily applied. In use by Furniture Manufacturers, Piano and Organ Builders, Car Contractors, and for elegant finish in private residences. Follow directions, success sure. Send for descriptive circular and samples. 24 samples by mail 9 cents.

CHAS. W. SPURR,

209 Canal St., N.Y., and 322 Harrison Ave., Boston

INDEX TO ADVERTISEMENTS

IN THE

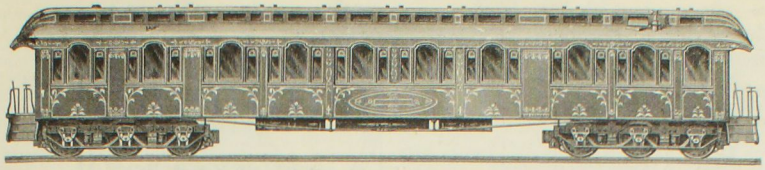
National Car-Builder.

As a filling for floors of passenger cars, this material prevents the loss of heat, deadens the sound and lowers the center of gravity of the car. More effective than shavings of double the thickness and entirely fireproof. Valuable also for covering all heated surfaces. Only $6 per 100 sq. feet, filling 3 inches thick. Sample and circular free by mail.

U. S. Mineral Wool Co.,

16 CORTLANDT ST., NEW YORK.

THE NATIONAL CAR-BUILDER.



DEVOTED TO THE INTERESTS OF RAILWAY ROLLING STOCK.

VOLUME XIII } NUMBER 8. } SEPTEMBER, 1882. { SINGLE NUMBERS, TEN CENTS. { $1.00 PER ANNUM.

Miscellaneous Items.

THE Cliff & Righter Co., car spring manufacturers, at Oswego, N. Y., have made another addition to their works.

PROF. S. W. ROBINSON, in his recent work on railroad economies, estimates the average cost of stopping trains at $1.77.

THE United States Rolling Stock Co. is building at its Chicago shops 900 freight cars for the Texas & St. Louis road.

THE Joy valve gear is being tried on a new engine, just turned out of the New York, Ontario & Western shops, at Oswego.

RECENT tests, made by General Manager Hain, show that the iron braces in the Manhattan Elevated R. R. structure retain their original strength.

THE Chicago & Alton shops in Bloomington, Ill., are building six new locomotives for the road, and have lately completely 100 stock cars.

THE Jones Car Works, at Schenectady, N. Y., have lately completed several passenger cars for the Eastern Railroad. They are finished in California redwood.

EACH engine on the Pennsylvania Railroad is to carry a box containing pins, needles, bandages, etc., to be used in the case of accident to any of the men.

THE Cincinnati Northern railroad, 3-ft. gauge, has contracted for 60 box and stock cars, 12 passenger coaches and four locomotives, the whole to cost $120,000.

A THREE-TRUCK freight car loaded with 1,000 bushels of wheat recently run from Solomon City, Kansas, to Kansas City, Mo., on the Union Pacific road.

THE new parlor cars of the Boston & Maine railroad, noticed in our last issue, are furnished with globe deflectors, made by the Globe Ventilator Co., of Troy, N. Y.

THE Hinckley Locomotive Co., in Boston, has lately completed 10 engines for the Northern Pacific, and several consolidation engines for the New York & New England road.

THE Central Railroad car shops, at Macon, Ga., have built and turned out two fine refrigerator cars for Johnson & Baxter, for transporting ice from their factory to points on the road.

A NEW round-house with a capacity for 18 locomotives, and also a large turn-table, are in course of construction at Augusta, Ga., for the Central of Georgia and Port Royal & Augusta roads.

THE Ward Axle, Brake and Coupling Company have purchased works at Monongahela City, Pa., and will commence manufacturing patent brakes, axles and couplers on a large scale, at once.

A NEW feature in the construction of locomotives in England is the introduction of copper-coated iron tubes. So far, the experiment has answered very well, and it is to be given a more extended trial.

THE Philadelphia & Reading Railroad is having several new drawing-room cars made at a cost of about $15,000 each, and is about erecting a new station at Gwynedd, on the North Pennsylvania branch.

THE Lehigh Car Manufacturing Co., at Stemton, Pa., has just completed 750 cars for the Central Railroad of New Jersey, and is now building 750 cars (box and gondola) for the New York, Lake Erie & Western.

A GIGANTIC new railway depot is to be built in Chicago for the joint use of the Illinois Central, Michigan Central, Baltimore & Ohio, and New York, Chicago & St. Louis roads. It will cost over $500,000, and will be completed next year.

THE Pullman Car Works, at Pullman, have built since April 20, 1881, the date of the first order received, 108 first-class passenger cars, 36 sleepers, 12 second-class passenger, 8 baggage and mail, 2 chair cars, 12 cabooses and 65 flat cars.

THE Rogers Locomotive Works, Paterson, N. J., are building nine heavy passenger engines, with 18x24-inch cylinders, and 68-inch drivers, for the New York, West Shore & Buffalo road. They will burn anthracite coal, and weigh 40 tons each.

THE Shellabarger Compartment Stock Car Company is a new corporation, with headquarters at Chicago, organized for the manufacture and introduction of a compartment stock car, for carrying all kinds of live stock, and also merchandise on return trips.

UNDER the caption "The Ruin Wrought by Railway Monopoly in Iowa," the Omaha *Herald* says: "Every county in Iowa has a railroad. Iowa is the richest State in the American Union of its age, and its happiness is to be measured by the number of its independent homes and the plenty that supports and surrounds them."

THE Adams & Westlake Manufacturing Company, of Chicago, being unable to secure space in the exposition building at Denver, are now putting up a building which will be known as the Adams & Westlake Manufacturing Company's Annex. This company are large manufacturers of railroad goods.

THE Young Men's Christian Association has opened rooms for its Railroad Branch in a building adjoining the Boston & Albany station, in Springfield, Mass. The rooms include a reading-room, well supplied with the daily papers, technical papers and magazines, bath-rooms and other conveniences.

ACCORDING to an exchange, the steel wheels on the forward truck of engine No. 39 on the New York, New Haven & Hartford road were made in 1876, by Frederick Krupp, the great cannon maker, and have been in constant use ever since. They have been run 185,620 miles, cost about $100 apiece, and are still as good as when first used.

CORDESMAN, EAGAN & Co., of Cincinnati, the well-known manufacturers of wood-working machinery, have organized a stock company called "The Cordesman & Eagan Co.," all the members of the late firm being represented. Their facilities for manufacturing have been largely increased, and many new standard tools and improvements have been introduced.

THE Grand Trunk Railway and Great Western Railway of Canada have been amalgamated, or rather the latter has been swallowed by the former. The Grand Trunk system now covers 3,330 miles of line; the old Grand Trunk, 1,512; the Great Western and affiliated lines, 822; Midland of Canada, 471; Chicago & Grand Trunk, 335; and the Detroit, Grand Haven & Milwaukee, 189.

IN a paragraph in our last issue it was stated that the average fuel consumption of Webb's compound locomotive was 28.2 pounds per train mile, as against the ordinary minimum of 30 pounds for doing the same work. The figures 28.2 should have been 23.2. The London & Northwestern Railway Co. is building ten more of those engines, all with the Joy valve gear.

THE "Central Support Car Truck Co." has been incorporated in St. Louis, with a capital stock of $300,000. The company will engage in the manufacture of three truck freight cars of the kind noticed in our last issue. The *Age of Steel* says that a number of prominent railroad officials are convinced of the advantages of such cars, and that several roads have already contracted for trial trains with the privilege of full equipment.

THE Inter-State Industrial Exhibition of Chicago will open Sept. 6 and close Oct. 21. Every foot of space has been taken by exhibitors earlier than in any previous season. The exhibit of machinery will be more varied and complete than ever before, including the usual quantity of railway machinery and devices. A fair proportion of these are from the Eastern States. The display of goods and manufactured articles will be extensive, and the art gallery will be well filled.

THE Union Switch and Signal Company, of Pittsburg, have recently placed, or are now placing, their interlocking apparatus in towers on the Boston & Albany Railroad; at Rockville, on the Pennsylvania Railroad; at Cleveland, on the C., C., C. & I. (44 levers); on the Eastern Railroad of Massachusetts; at Wayne Junction, on the Philadelphia & Reading Railroad system; in the Grand Central station of the New York Central (60 levers); and at New Brunswick, on the New York division of the Pennsylvania Railroad.

THE Johnson heater for passenger cars is highly commended by the officials of the Old Colony and other New England roads upon which it has been in use for two and three years past. It is absolutely non-explosive, economizes fuel, maintains a uniform temperature in the cars, and is more easily managed than the ordinary coal stoves. The heaters give entire satisfaction to the patrons of the roads, and a large number of additional cars are being fitted with them for the coming winter.

THE Allen Paper Car Wheel Co. has declared a dividend of five per cent. from the profits of the last six months. Material additions have been made to its plants, including a 42×60 ft. boiler house, at Morris, Ill., to be completed in ninety days, which with other contemplated improvements will increase the aggregate capacity to 25,000 wheels per annum. The business of the company is in a most flourishing condition, and the orders from new and old patrons constantly increasing.

THE "Bee Line" has issued a circular describing the advantages of that route to the East. There are new coaches on all trains; cars are 45 feet long, have Allen paper wheels, air brakes and safety platforms, mahogany finish inside, seats with springs in backs, windows large and of French plate glass; and in one end of the coaches is an extra wash-room with marble basin, large mirror, and towels and soap free of cost. The only possible additions to these safeguards and luxuries would be a picture gallery, hot and cold shower baths, and a circulating library.

"No railroad track," says an unknown authority, "should be laid without a constant consultation of the thermometer, and the application of gauges properly regulated for temperature. That is the general idea, the force of which will be seen at once by every railroad engineer. Inventors may find in this hint something valuable. A reliance on spikes against spreading might be shown to be nonsense by a little boy who had received his first lesson in 'expansion' of bodies. The absence of spikes, though, may show that the rails had spread and that the inspection was negligent."

THE Globe Iron & Columbia Car Spring Works, of Andrews & Clooney, at No. 545 West Thirty-third street, New York, are running to their full capacity on car-springs of all kinds, engine springs, car wheels and car castings, brass bearings and similar work. The works are to be enlarged by a new building which will double the foundry capacity. They are shipping car wheels and axles for street railroads to all parts of the world, and have just finished a large order for passenger and engine elliptic springs. In the machine shop they are busy on engines and general machinery for heating the city by steam.

MR. C. O. LYNK, of Butler, Ind., has patented a baggage check which is thus described: It is 4¼ inches in length, 1¼ inches in width, made of heavy plate-brass, and has the names of 28 checking stations stenciled upon it, 14 upon either side, with a simple but ingenious arrangement for indicating the stations between which the baggage is checked. To use as a local check, local stations are to be placed upon either side; consequently, a very large saving of checks can be made, and the check always shows the origination of baggage, so that lost baggage can be easily traced to the checking station. The check can be made any desired length, to contain any number of stations.

MR. EDWIN MCMANUS, of Randolph, N. Y., has invented a new style of freight car for transporting merchandise by dispensing with the use of the ordinary packing boxes. This is done by dividing the car body into compartments into which a series of packing cases in the form of drawers are inserted from the outside. These cases are provided with handles, are of uniform size, and have hinged covers. The receiver of the goods can unlock the cases, remove the goods, and the empty cases can be returned with the car to the shipping point for further service. The sides of the car consist of sliding doors, which, when closed and locked, prevent access to the cases.

A PROMINENT car spring manufacturer thinks that the practice of "jumping" passenger cars in order to determine the action of the springs is a mistake, for the reason that the motion of a car produced by the united efforts of

,en or twelve men on one end of it, although it may cause a very lively action of the springs, is exactly the reverse of the motion produced when the car is running on the track in regular service. In the latter case the motion s transmitted to the bolster springs through the equalizers, while by the jumping process it is transmitted to the eqalizers through the bolsters. This latter mode may get the car down to its bearings, but does not determine the correct action of the springs.

THE American Brake Co. reports the following pieces used in making repairs of brake on 530 cars during April, May and June, and also cost of same: April—11 disks, 11 forks, 11 brackets, 2 B cranks, 1 B lever, 2 hook bars, 1 eye bar and two brackets, 1 clevis, 8 governor balls, 11 bolts, 4 springs, 1 spring. Total cost, $12.29. May —22 forks, 10 brackets, 4 clevises, 11¼ disks, 5 B cranks, 8 liners, 8 governor balls, 2 wrought rods, 2 straps, 3 bolts. Total cost, $15.92. June—10¼ disks, 2 collars, 11 forks, 10 brackets, 13 nuts, 4 rods, 1 hook bar, 1 clevis, 2 bolts, 8 governor balls, 20 small springs, 2 large springs, 2 straps. Total cost, $13.74. More than half of these repairs were caused by a lot of defective iron, which was used in the original equipment of these cars.

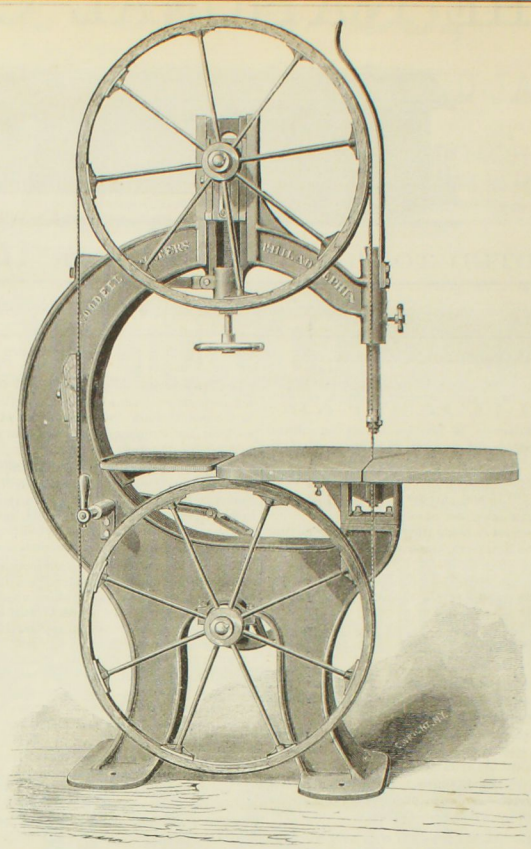
THE London *Times* describes some new first-class fast passenger "carriages" that have just been placed on the London & Northwestern Railway as being the most complete and comfortable yet built. They are open to any passenger who has paid first-class fare. There is a passageway running throughout, and a lavatory at each end of the car, with other necessary accommodation, the absence of which, in England, frequently makes a long railroad journey, with few stoppages, a matter of absolute terror. There is a place for baggage, a porter's room, hot-water pipes instead of foot-warmers, and compressed gas for lighting. These conveniences are said to be a vast improvement on the prevailing saloon system in England, the adoption of which has been due to the protests of the large and increasing traveling public from the other side of the Atlantic.

DURING the past few weeks the Hudson River Tunnel has perceptibly increased in length, and special progress is being made on the Jersey side. The total distance now completed on that side is 1,197 feet in the north tunnel and 562 in the south tunnel. The heading of the north tunnel having been advanced 475 feet from the inner air-lock, a new air-lock is now being set up 20 feet from the heading. An auxiliary air-lock for passing timber is being put up in the same bulk-head. In the north tunnel, on the eastern side of the river, the plates of the new section, which is 15 feet long, have been carried down about two-thirds of the circle. The earth has improved sensibly, and less difficulty has been met than heretofore. The steam power on this side has been found inadequate to supply the air compressors, and a large boiler is being set up to supplement those already in use.

A NEW speed register for railway trains, invented by Mr. John C. Henry, was recently tried on the Kansas City, Fort Scott & Gulf road. One of the machines was placed on the engine and one in the car. It consists of a dial like that of a steam gauge, with an index which marks the increase or decrease of speed, and a registering instrument something like the anemometer used by the signal service for registering the velocity and direction of the wind. This register is furnished with a coil of paper divided into squares by lines, those running lengthwise showing the height of speed and the transverse lines dividing the record off into miles. Mr. Henry claims that it affords a complete check by indicating to the engineer at all times just how fast his train is running, and making a record of same for the inspection of the road officials. So far as appears, this is nothing very new. Wythe's instrument did substantially the same thing years ago.

A WRITER in the New York *Sun* suggests that the time is at hand when the engineer of every fast passenger locomotive will have the aid of a competent assistant, in addition to the fireman, to look out ahead and communicate as often as may be necessary with him in the cab. The suggestion, we should say, is a timely one. The engineer of a fast train has about as much as a man with only two eyes and two ears can well attend to. He must look out for switches, signals, bridges, crossings, malicious obstructions and train-robbers, keep an eye on the water-gauge, work the air-brake to the best of its capacity—which of itself is no trivial matter—do the whistling, know the time to a minute, and all the grades and peculiarities of the track. He must, in fact, make himself extremely useful by looking after a hundred things, and never for an instant become absent-minded. The faster the train runs the more wide awake he must be to every detail of his duty. As things now are, he does not have to ring the bell, to be sure, or do the firing, although some inventive demon tried not long ago to arrange a patent plan to make him do both. The idea of a "pilot" to keep an extra lookout strikes us as a good one. Precisely on what part of the engine he should be placed we will not undertake to say, but a place will have to be provided for him before a great while. There is obviously a limit to human capacity, and the general run of locomotive engineers are merely human.

To discuss an opinion with a fool is like carrying a lantern before a blind man.



IMPROVED BAND-SAWING MACHINE.

THE engraving represents a new Band Sawing Machine, manufactured by Goodell & Waters, 3103 Chestnut street, Philadelphia. This machine is heavy enough for all the ordinary classes of work. The column or frame is cast in one piece, being a hollow or tubular casting, thus combining great strength with extreme lightness of the parts. The wheels are 35 inches in diameter, with rubber surfaces, giving them elasticity as well as increasing the cohesion with the saw. The wheel-shafts are hung on pivots, and arranged to cant the wheels and set the saw on any part of the wheel face. The tension of the saw is regulated by the upper wheel, which is hung to a gibbed frame, and adjusted readily by a hand-wheel, and has the compensating weight. The back guide, at the point of junction with the saw, consists of a steel plate for the saw to run against, with adjustable side plates on either side of saw. The table is iron, and is arranged to tip for bevel work. Each machine is complete, and fitted with one ¼-inch saw, brazing vise and tongs. Weight, 1,400 pounds; speed, 350 revolutions per minute.

A COMPARISON of the value of Colorado and Pennsylvania coal for locomotive purposes is made in a recent report of the General Manager of the Colorado Coal and Iron Company. The figures are remarkable. On the main line of the Pennsylvania Railroad the number of miles run per ton of coal consumed is 25, at a cost per mile for fuel of 5.06; on the United Railroads of New Jersey Division, 33 miles to the ton, at a cost of 9.86 per mile; on the Philadelphia & Erie Division, 19 miles to the ton, at a cost of 7.23 per mile. On the Denver & Rio Grande Railway the number of miles run to the ton is 41.19, at a cost of 7.33 per mile. Considering the heavy grades of the Colorado road, the mileage record certainly is remarkable; and the cost per mile in Colorado is very low when the fact is considered that the comparison is made with a railroad famous for its economical management, and running through the greatest coal-field in the world. The figures are creditable alike to Colorado railway management, and to the quality of Colorado coal.—*Philadelphia Press.*

A CORRESPONDENT of *The Railroader* thus describes the starting of the Mansfield & Sandusky railroad, the first railroad in Ohio: "When it was projected the first meeting for organizing the enterprise was held in a schoolhouse. Among the speakers was a Mr. Purdy, of Mansfield, who made the astounding declaration that if the road was built they could start a train from Mansfield in the morning and run it through to Sandusky, 47 miles, in one day, and that the locomotive could haul ten cars and each car carry 150 bushels of wheat, making 1,500 bushels of wheat that could be hauled in one train of cars. Everybody was invited to take stock, and everybody did take stock, and the work was began and pushed forward with commendable zeal. The road was laid with strap rail in this wise: First, timbers called mud-sills 8×12 were embedded in the ground lengthwise the track, then cross-ties were laid on these sills, the ties were notched over the sills, and 4×6 stringers were laid in these notches and wedged fast. Then another 2×4 strip called ribbons was spiked on to the stringers, and the iron rails (something heavier than the ordinary wagon tire) were spiked on to the ribbon, and the road was completed. The locomotives were not as large as those now in use on our narrow gauge roads, while the track was wider by several inches than our standard gauge."

THE *Railway World* says of the private cars of railway presidents: "Mr. Vanderbilt travels in a palatial vehicle named after himself, which is said to have cost $40,000, and which is ornamented to an extent that would have seemed incredible to the railroad men of Stephenson's time. Handsome oil paintings decorate the sides of the exterior, and numerous conveniences and luxuries are provided. President Jewett rides in a Pullman car, said to be the handsomest in use on any Eastern road. It is a mate to the private car of President Villard, of the Northern Pacific, and is about seventy-two feet in length. The first room is walled with Irish bog oak, carved and ceiled with light wood. Elaborate stenciling does much to improve the general appearance, while numerous windows and mirrors are provided. In addition to the main saloon there is a pantry, toilet room, kitchen, bed room and bath room. Refrigerators under the car facilitate the conveyance of ice, milk and other perishable articles. Jay Gould's private car is an old-fashioned Pullman which has undergone some alterations. The apartments, like the windows, are small, but convenient. There is a kitchen, steward's and cook's room, dining room, state room, and observation room. Mirrors are set in the walls, and the apartments are tastefully finished in dark wood. President Baldwin, of the Louisville & Nashville, uses a car somewhat resembling Mr. Jewett's. The ceilings, however, are plainer, there is no bath room, and there are other points of difference. Mr. Baldwin contemplates altering some of the features of his car."

Locomotives in the United States.

The number of locomotives on the 104,325 miles of railway in the United States at the commencement of the present year is stated by Poor's Manual as 20,116, an increase of 2,167 over the number reported one year previous. In our issue of December 8, 1881, we estimated the number of engines manufactured during the year at private works and railway shops as about 3,000, of which probably 1,000 would take the place of machines worn out and retired. This would give a net increase of about 2,000, which nearly corresponds with the actual figures given in the manual, whose statistics, however, it must be remembered, do not come within the exact bounds of the calendar year, as they are made up from the railway reports which terminate at various periods. It is interesting to note that, taking the manual's totals of railway mileage and number of engines for the last two years, they give nearly the same average number of miles per engine: that for 1880 being 5.21 miles, and that for 1881 being 5.18 miles, showing a slight and not unnatural falling off in the average, as the roads opened into new country do not at first require as large equipment as those upon which business is developed. Had the average of 1880 continued, the increase for last year would have been only 93 locomotives more than that actually reported.

The number of engines added this year is likely to be somewhat less than that built in 1881, as orders were in many cases curtailed when the temporary depression of last winter and spring came, and the lost time cannot be recovered even if the demand greatly increases, as it seems certain to do. The 15 locomotive works in the United States, however, appear to be fairly busy, and some we know have orders ahead sufficient to run them through the year. Most of them have increased their productive capacity, and one or two new works are being constructed. The buildings are being erected for one of these near Chicago, but the works are not likely to be finished in time to offer much competition this year.

Prices of locomotives have fallen somewhat. The fact is they were higher last year than necessary to afford a good profit, but as the manufacturers had all that they wanted to do and the railways must have the engines at any price, it is not strange that as high as $13,500 was asked and paid for an 8-wheel passenger engine. The locomotive builders made money enough last year to enable them to stand a little lower prices, although they are in no danger of suffering this year. The railways will have a heavy business, the country is prosperous, and the manufacturers are as much entitled to share in the general prosperity as are the farmers, many of whom will grow rich with a single year's harvest.—*Railway Age.*

Master Car Painters' Association.

The thirteenth annual meeting of this association will be held at the Palmer House, in Chicago, commencing on Wednesday, Sept. 20. The following subjects are announced for discussion, with the name of the member who is expected to open the discussion upon each :

1. *What is the best method of Filling and Finishing Light Colored Woods so as to preserve the color in its natural state as much as possible ?*—J. C. Stout, Union Pacific Railway.

2. *When the Paint on a Panel is in a condition to Blister, why does it not blister all over in place of being limited to a few spots, which is the usual case ?*—Geo. Forby, Missouri Pacific Railway, St. Louis. Mo.; Wm. Sharp, Lake Shore & Michigan Southern Railway.

3. *Surface Painting.*—An essay, by C. E. Felch, Southeastern Railway, Canada.

4. *What advantage is there, if any, in Striping, Lettering and Decorating on Bare Color, instead of giving a coat of varnish previously ?*—M. W. Stines, Barney and Smith Mfg. Co.

5. *What are the benefits resulting from the use of Ready-Mixed or Prepared Ground Colors in the railway paint shop ?*—Jno. H. Will, New York Central & Hudson River R. R.

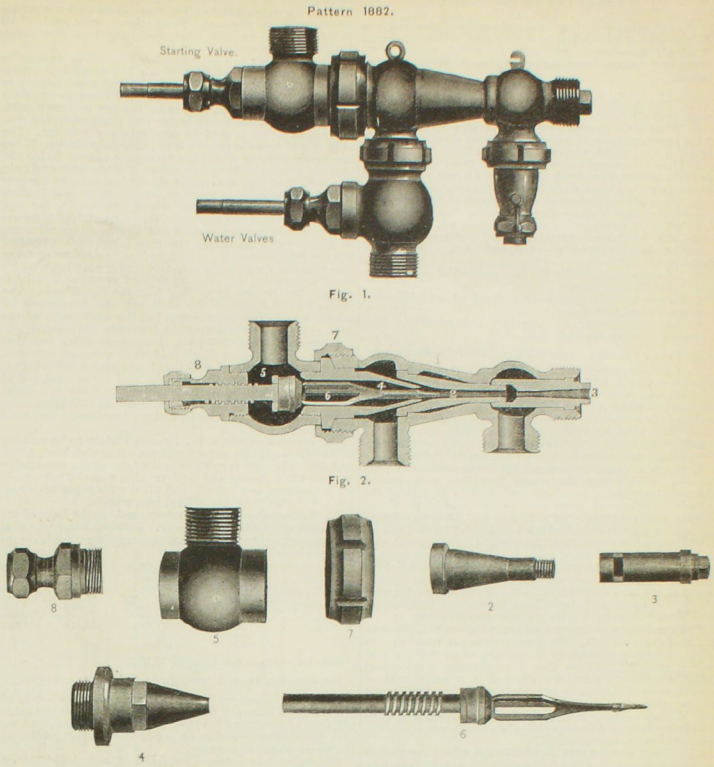
6. *The most approved method of Keeping Passenger Cars Clean, and the Best Material for Washing them on the outside when in service, with the least injury to the varnish.*—D. D. Robertson, Michigan Central R. R.

7. *Practical Thoughts on Locomotive Painting,* by Jno. S. Atwater, Hinckley Locomotive Works.

8. *Wherein lies the benefit of putting on Two or Three Coats of Finishing Varnish on a Coach Body, within 24 or 36 hours of each other, in place of giving each coat a proper time to dry, (known by some as the Repeating Process).*—Frank Fisk, Columbus, Hocking Valley & Toledo Ry.; A. P. Sweet, Detroit, Lansing & Northern R. R.

9. *The most approved methods employed for Removing Old Paint from Passenger Cars, also for Removing Cracked or Decayed Varnish from the inside finish of the car, with the least expense and damage to the surface.*—J. C. Congdon, Northern Pacific R. R.; R. McKeon, New York, Pennsylvania & Ohio R. R.

Other topics will also be considered, including the making of stencils for car lettering, the utilizing of refuse paint. the effect of pigments or ground coat colors on vermilion, etc.



The cuts represent the new or 1882 style of injectors, invented by W. B. Mack, and made by the National Tube Works Co., 8 Pemberton Square, Boston. Fig. 1 shows outside of lifting injector, and Fig. 2 a section of same, in which the several parts are numbered to correspond with the cuts as numbered below, No. 2 being the combining tube ; 3, delivery tube ; 4, steam cone ; 5, steam valve ; 6, starting valve; 7, spanner nut, which holds the several parts together ; and 8, stand of steam valve. The parts are all made to templet, so they can be ordered according to number when renewals are necessary of any one or more parts. Fig. 3 represents the non-lifting injector, the parts of which can be duplicated the same as the other, but the patterns are somewhat different.

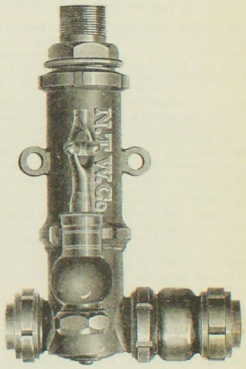


Fig. 3.

Running Railway Trains on Sunday.

An action against the Louisville & Nashville Railway Co., for running trains in violation of the Kentucky Sunday laws, was recently decided in favor of the company by the Court of Appeals of that State. The court holds that the running of railway trains on Sunday is a work of necessity for the following reasons :

"Railroad companies as carriers of passengers furnish at this day almost every accommodation to the traveler that is to be found in the hotels of the country. His meals, as well as sleeping apartments, are often furnished him ; and to require the train, when on its line of travel, to delay its journey that the passengers may go to a hotel to enjoy the Sabbath, where the same labor is required to be performed for him as upon the train, or to require him to remain on the train and there live as he would at a hotel, would certainly not carry out the purposes of the law ; and besides, the necessity of reaching his home or place of destination must necessarily exist in so many instances as to make it indispensable that the train should pursue its way. So of the trains transporting goods, merchandise, live stock, fruits, vegetables, etc., that by reason of delay would work great injury to parties interested. A private carriage, in which is the owner and his family, driven by one who is employed by the month or the year, to the church in which the owner worships, or to the house of his friend or relative, on the Sabbath, is not in violation of the statute. So in reference to the use of street railroads in towns and cities on the Sabbath day. Those who have not the means of providing their own horses or carriages, travel on street cars to their places of worship or to visit their friends and acquaintances ; and such is the apparent necessity in all such cases that no inquiry will be directed as to the business or destination of the traveler, whether on the one car or on the other, nor will an inquiry be directed as to the character of the freight being transported. Nor will the person desiring to hire the horse from the livery stable be compelled to disclose the purpose in view in order to protect the keeper from the penalty of the law. Such employments are necessary, and not within the inhibition of the statute. The common sense as well as the moral sentiment of the country will suggest that the merchant who sells his goods, or the farmer who follows his plow, or the carpenter who labors upon the building, or the saloonkeeper who sells his liquors on Sunday, are each and all violating the law by which it is made penal to follow the ordinary vocations of life on Sunday. The ordinary usages and customs of the country teach us that to pursue such employments on the Sabbath is wrong. Every man can realize the distinction between pursuing such vocations and that of transporting the traveler to his home or the pursuit of such employments as must result from the necessary practical wants of trade."

Charcoal Iron for Car Wheels.

The following questions as to the merits of charcoal iron for car wheels were asked by the journal of the Charcoal Worker's Association, for July, to which replies were made by four prominent car wheel manufacturers as given below:

QUESTIONS.

1. What is the largest mileage of a chilled car wheel made entirely from charcoal pig iron, to your knowledge?
2. What is the average mileage of any large number (give number if possible) of wheels of the class mentioned in query 1, of which you have any record?
3. Have you records of wheels made from mixed irons, or from anthracite and coke iron entirely, and how do they compare with wheels made from all charcoal iron?
4. What advantages do you find charcoal pig iron possesses for chilled castings over that made from other fuel.
5. What do you consider as the proper test for a first-class iron for chilled car wheels and castings as to the depth of chill, character of chill, and uniformity of iron furnished?
6. What do you consider the best method of grading pig iron for chilled castings?
7. Do you know of any improved wheel which excels one made from chilled iron?
8. What superiority do you find cold-blast pig iron possesses over hot-blast pig iron.

ANSWERS OF LOBDELL CAR-WHEEL CO., OF WILMINGTON, DEL.

1. A double-plate Bush & Lobdell patent wheel, 30" in diameter, was exhibited at the Centennial, at the Paris Exhibit, and recently at the Atlanta Exhibition, which had been in use under a freight car on the New York & Erie railroad for twenty-four years. It was supposed to have made more than 600,000 miles. There was also a chilled driving-wheel tire, 48" in diameter, which had been 15 years in constant use on the Richmond & Danville Railroad.

2. But few roads furnish records of the mileage of their wheels. We see from the report furnished us by one of the prominent roads to whom we supply wheels, that 154 wheels, 33" diameter, were removed from under their passenger cars during the year 1879, that had made an average mileage of 70,000 miles, leaving a large portion still in use. Had these wheels been used for freight service, no doubt, as their speed would have been so much less, they would have made double the mileage stated; but it is unusual for railways to keep an accurate mileage of freight car wheels. Many of our make of wheels have been in use on the road above mentioned, and have been taken out from under freight cars after having been in use over 20 years.

3. All our car wheels are made of a mixture of different kinds of charcoal iron. We have no record of wheels made of all anthracite or coke, or a mixture of anthracite and coke irons. We suppose that a reasonably good wheel could be made of a mixture composed of a small part of some brands of anthracite or coke iron, but a better one can be made of all charcoal iron.

4. Wheels made of iron smelted with charcoal will have a more uniform and lasting chill than if the ore is smelted with anthracite coal or coke.

5. The best test for iron for chilled car wheels or chilled castings is its use, and depends on the character of the iron with which it is to be mixed, as no brand possesses all the qualities necessary. Iron which will make a hard chill and uniform in depth, leaving the center or unchilled part tough and strong, that is, not liable to chill, crack or wear in blotches on the tread, is the most nearly perfect in character.

6. The best method of grading car-wheel iron is to break each pig; judge of its strength by breaking, and of its character otherwise by an inspection of the fracture; but to do this with any degree of satisfaction requires a peculiar talent, which every one does not possess; also experience.

7. We know of no wheel—when safety and economy are considered—that is equal to a good chilled cast-iron wheel, made with proper care and of the proper materials.

8. Most ores, when smelted with cold-blast, will make an iron which will have a more uniform and lasting chill than when smelted with hot-blast. Some ores are affected more injuriously than others. Some, when smelted with hot-blast, make an iron no better than the average of anthracite iron. This was the case with iron made of Conewingo ore. When smelted with cold-blast, it made an iron equal to any known for car wheels. We have known of one or two compact specular ores, the iron from which has been improved by the blast being heated to a temperature not exceeding 300°, but such ores are very rare. We know of no red or brown hematite ores which will not make a better iron when smelted with cold-blast.

ANSWERS OF CAYUTA WHEEL AND FOUNDRY CO., WAVERLY, N. Y.

1. Of 33" sleeping-car wheels, over 200,000 miles; of 30" engine trucks, 128,000 and still running.
2. Seventeen 33" sleeping-car wheels, 114,000 miles.
3. Cannot give actual figures; mileage is in favor of the charcoal iron wheels by considerable, however.
4. More certainty of uniformity in re-melting; also, better character to the chill, and greater cohesive power and tensile strength.
5. Car-wheel iron should be thoroughly uniform; the chill should not show a distinct line of separation from the gray iron, but should shoot irregularly down into it—technically speaking, be well knitted. It should possess this chilling property, and at the same time, an open grain; be very strong in its cohesive power; and in the plate and hub of the wheel, be soft and strong. This will give a tread, smooth and uniform in chill, that will wear on the track, and a soft hub to bore, free from liability to crack in hub or plate. The best test is positive proof, by the successful working of an iron into first-class car wheels.
6. We like the plan of chilling one side only of the furthest end of several pigs in the bed.
7. We know of nothing superior to a thoroughly first-class charcoal car wheel.
8. It is less likely to be burnt in making. There is more life in the grain, and we think it possesses more strength and durability.

ANSWER OF RUSSELL WHEEL & FOUNDRY CO., DETROIT, MICHIGAN.

We send to-day last year's published wheel record of the Lake Shore & Michigan Southern Railway, which maintains the best and most complete system of mileage and wheel record of any railroad in the country, and these reports will best answer some of the queries you propose.

We know of car wheels, made of charcoal iron, making considerable more than 200,000 miles, and have seen wheels taken from axles that had been in continuous use, under freight cars, for 13 years. Those wheels were made of all Salisbury iron, in 1857, when Salisbury iron was much better than it is now.

We have never had any experience in using anthracite or coke irons in car wheels. There is a prominent wheel-maker in your locality that has experimented largely in that direction. The chill of charcoal irons is certainly very much harder than that in anthracite and coke iron.

The fifth query is a very broad and comprehensive one, and might be the subject for considerable discussion. The chill test in furnace pig-bed is of prime importance. There are many irons of which the consumer cannot judge the chilling properties by the appearance of the iron, and only the chill test will determine it. This is notably the case with Lake Superior iron. Then, too, we think that furnace men, in making iron for car wheels, malleable, for any special use, when, by experience, they have arrived at a good result, should be very careful not to change ore mixtures or in any way depart from the care taken in first producing the desired quality. Changes in ore mixtures, or other experiments about furnaces, frequently play havoc with the foundryman, who has to depend upon the iron he is using. We believe in mixing iron for car wheels. The character and depth of the chill may be determined by selection and experience in use, but the uniformity of the iron, in its making and grading, is of vital importance.

In regard to cold-blast iron, there is no doubt but that some of the Hanging Rock cold-blast irons are superior, and give a hardness of chill that is unequaled, but whether with the same care in selection and use of ores a mild warm-blast would hurt the quality, we think is a great question. We would as soon use warm as cold-blast Lake Superior irons in car wheels, and we have made and used both kinds.

The Martel furnace, at St. Ignace, claims to be making an excellent chilling car-wheel iron, using high heat, 1,100 to 1,300°. We are very weak in the faith of the superiority of cold-blast irons, and believe that a steel-tired wheel, when made of good steel, and filled with paper or wood-plate, is better than any chilled iron wheels.

The following is from the report made to the Lake Shore & Michigan Southern Railway. Recapitulation of miles run by engine, tender, and passenger equipment wheels removed for five years:

	No. of wheels drawn.	Total mileage.	Average mileage.	Wheels put under.
A	4,054	229,965,083	56,736	4,670
B	2,385	217,576,361	64,274	5,753
D	1,357	72,048,679	53,094	1,329
E	407	21,822,946	53,619	2,646
F	603	32,907,044	54,678	3,003
	9,806	574,384,613		17,413

General average per 33-inch, 58,575.

INFORMATION FROM A. WHITNEY & SONS, PHILADELPHIA.

Upon invitation we visited the very complete works of Messrs. A. Whitney & Sons, Philadelphia, where the manufacture of the Hamilton steel-wheel is carried on, and we give from their circular, or in our words, their replies to the above points of inquiry.

We were shown large numbers of superior chills, of both anthracite and coke irons, and also many samples of wheels which had been in use. We were particularly interested in one wheel which, after having been in use for 24 years on the Philadelphia & Reading Railroad, still showed a true surface and sufficient depth of chill for further wear. It was made from charcoal iron. Concerning the character of iron demanded, the Messrs. Whitney say that "the nature of the service required of cast-iron car wheels necessitates the production of a casting of great strength to insure against breakage, with the attendant loss of life and property, and also of extreme hardness in that part of the wheel in contact with the rail, in order to secure durability. The combination of these qualities is found in but a limited portion of the immense number of brands of pig irons in the United States. Either the requisite strength or the chilling quality, necessary to insure durability, is absent in the great majority of irons. And many irons possessing these two qualities are excluded from the list of car-wheel irons on account of the difficulty in obtaining a sound casting of the form of a car wheel. The quality of a car wheel, so far as strength is concerned, can be readily determined, but its durability can only be established by actual service."

Concerning the Hamilton process, which consists of melting together charcoal and anthracite pig irons with Bessemer steel ends, the firm claims:

"It has been fully demonstrated that the use of steel brings into service many charcoal irons that would not otherwise be available for making wheels, on account of their deficient strength or absence of chilling qualities, that a percentage of anthracite or coke irons may be used without impairing the strength or durability of the wheel, and that steel is better than white iron to bring up the chill in any wheel mixture." The greatest recorded mileage made by Whitney wheels, with the use of steel, is 178,000 miles, and this is the greatest mileage on the Pennsylvania Railroad wheel records up to 1876. It is probable that since that time a much higher mileage has been obtained of which there is no accessible record.

Memoranda of tests of wheel mixtures of charcoal irons and steel, wrought and anthracite iron added thereto:

Charcoal with	Tensile per sq. inch.	Transverse.	Deflection.
2½ per cent. steel	25407	7925	.00157
3½ per cent. steel	20733	9538	.00185
6¼ per cent. steel	24400	7938	.00218
6¼ per cent. anthracite			
7½ per cent. steel	28150	9425	.00224
7½ per cent. anthracite			
2½ per cent. steel	25550	8750	.00221
2½ per cent. wrought iron			
6¼ per cent. anthracite			
5 per cent. steel	26500	8200	.00284
5 per cent. wrought iron			
10 per cent anthracite			

Tensile strength is the weight required to pull apart, per square inch of area.

Stretch and deflection are stated in decimals of an inch per 1,000 pounds of load.

Transverse strength is reduced to show weight required to break a bar an inch square, supported at one end, the weight being applied one inch from point of support.

The average tensile strength per square inch of charcoal irons used for car wheels is 22,000 pounds.

Messrs. Whitney publish the following specification for grading pig iron for car wheels by chill tests made at the furnace:

"The chill cup is to be filled even full, at about the middle of every cast from the furnace, by using a small ladle, or by placing the cup in the pig bed, a little below the level of the pigs, and letting the iron flow into it until it is even full. The test piece so made will be 7¼ inches long, 3¼ inches wide, and 1¼ inches thick, and is to be broken across the center when entirely cold. The depth of chill will be shown on the bottom of the test piece, and is to be measured by the clean white portion to the point where gray specks begin to show in the white. The grades are to be by eighths of an inch, viz.: ⅛, ¼, ⅜, ½, ⅝, ¾, ⅞, etc., until the iron is mottled; the lowest grade being ¼ of an inch depth of chill. The pigs of each cast are to be marked with the depth of chill shown by its test piece, and each grade is to be kept by itself at the furnace and in forwarding. At large furnaces, it is best to take three test pieces of each cast, viz.: at beginning, middle and end; and if there is a difference of ¼ of an inch or more in depth of chill between the first and last of the cast, the pigs should be divided into two or three portions, and graded by their respective chill tests."

In making analyses of pig irons for car wheels, the firm consider that the amounts of silicon and manganese, are of primary importance, and the quantities of sulphur and phosphorus secondary to these elements.

Master Car-Builders' Association—Subjects for Discussion at the October Meeting.

[Report of the Committee to select subjects for consideration at the adjourned meeting to be held October 10.]

It is recommended that committees be appointed to consider and report on the following subjects at the adjourned meeting in October. Your committee would suggest that in cases when it is impossible, owing to the want of time, to make complete reports on these subjects at the October meeting, preliminary reports be submitted at that time, which with the discussions thereon will open the way for a more complete report at the annual meeting next year.

The following are the subjects proposed and the names and addresses of the chairman of the committees appointed to report on them.

1. *Continuous Brakes for Freight Trains.*—The committee to report whether it is impracticable to apply the brakes now in use in passenger trains to freight trains, and if so, why, and whether the objections to applying such brakes to freight trains are overcome by any other known form of brakes. C. E. Garey, New York & Harlem Railroad, Morrisania, N. Y.

2. *On Iron Cars.*—The committee to report whether it would be profitable to railroad companies to substitute iron or steel for wood in the construction of any, and if so, which, of the parts of cars now made of wood. W. R. Davenport, Erie Car Works, Erie, Pa.

3. *On a Standard Wheel Gauge and Form of Section for the Treads and Flanges of Wheels.*—The committee to report which action, if any, is required with reference to the adoption of a standard wheel gauge, and to recommend a standard form of section for the treads and flanges of wheels, and whether experience indicates that any advantage results from the use of a conical form for the treads of wheels, and if so, how the advantage is shown. R. C. Blackall, Delaware & Hudson Canal Company, Albany, N. Y.

4. *On Draw Gear.*—The committee to report whether and why it would be advisable for the Master Car Builders' Association to recommend a standard automatic draw-bar, or one which, without being automatic, would make it unnecessary to go between cars to couple or uncouple them, and to suggest a standard belonging to one of these classes for adoption. J. S. Lentz, Lehigh Valley Railroad, Packerton, Pa.

5. *On the Causes of Accidents to Trainmen.*—The committee to report what means can and should be provided to protect train and yardmen from injury. W. F. Turreff, Cleveland, Columbus, Cincinnati & Indianapolis Railway, Cleveland, O.

6. *On the Most Economical Carrying Capacity for Freight Cars.*—The committee to report what are safe and economical loads for axles of given sizes. John Kirby, Lake Shore & Michigan Southern Railway, Cleveland, O.

7. *On the Economy of Grinding Cast-Iron Car Wheels.*—L. Packard, Baltimore & Ohio Railroad, Baltimore, Md.

8. *On Steel-Tired Wheels with Wrought-Iron Centers.*—The committee to report on their safety and cost of service compared with chilled cast iron and paper wheels. F. D. Adams, Boston & Albany Railroad, Allston, Mass.

9. *On Refrigerator Cars.*—The committee to report what it knows or can learn on that subject, and whether it is more economical for railroad companies to own and run such cars, or whether they should be controlled by other companies and their employés. Thomas Aylesbury, Kansas City, St. Joseph & Council Bluffs Railroad, St. Joseph, Mo.

10. *On Heating Cars.*—The committee to report what are the elements of safety, economy and comfort in various methods of heating cars. J. N. Milebam, New York, Lake Erie & Western Railroad, Jersey City, N. J.

11. *On Standard Freight and Passenger Car Trucks.*—Wm. McWood, Grand Trunk Railway, Montreal, Can.

12. *On the Decoration and Furnishing of Passenger Cars.*—The committee to indicate the principles which should control the interior and exterior decoration of passenger cars, and how both it and the comfort of cars may be improved, T. A. Bissell, Barney & Smith Manufacturing Company, Dayton, O.

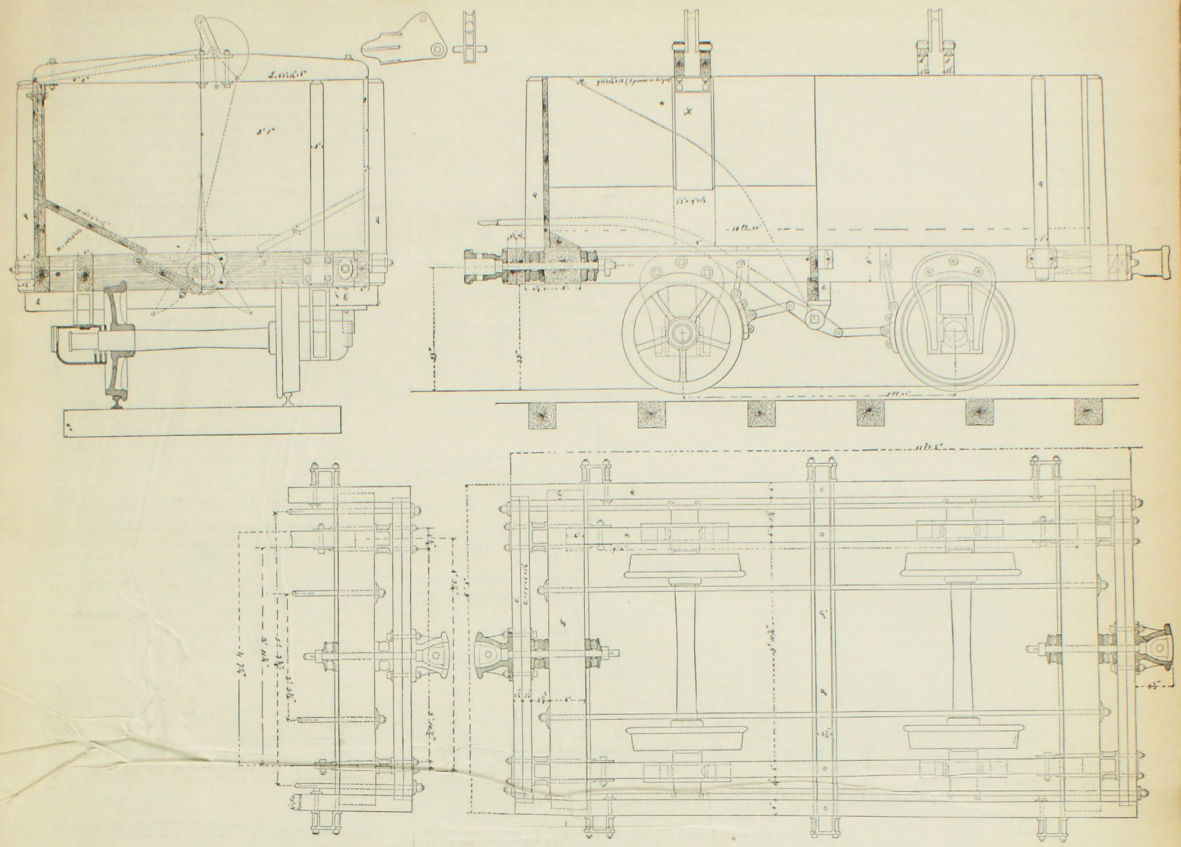
13. *On the Revision of the Constitution.*—This committee was instructed to report at the adjourned meeting, to be held in October, "such amendments to the constitution of this association as on investigation they may think desirable." Leander Garey, New York Central & Hudson River Railroad, New York.

M. N. FORNEY,
L. PACKARD,
THOS. A. BISSELL.

THE Louisville, New Albany & Chicago company have decided to locate their extensive shops at Lafayette, Ind.

THE Fitchburg Railroad shops in Boston are building 100 of Marsden's patent drop-stake cars, which can be used either as flat or gondola cars. They are also altering 100 box cars to refrigerator cars.

FOUR-WHEEL COAL CAR—BRIGHTHOPE (VA.) RAILWAY.



The engravings represent an improved four-wheel coal car designed by Mr. James R. Werth, Superintendent of the Brighthope Railway (3-ft. gauge) and built at shops of the road at Chester, Va., by Mr. A. Calder, the Master Mechanic.

The improvement consists mainly in the dumping arrangement, by which the load is more quickly discharged, and a stronger and more durable construction of the car body is at the same time secured. In the ordinary cars of this class, the load is carried at the corners of the body frame, which severely taxes the tenons of the sills to which the pedestals are bolted, and in a short time the frame loses its rigidity and gets out of square. This difficulty is avoided in the improved construction by dispensing with the ordinary hoppers and substituting two sets of doors, hung lengthwise the car, and hinged on the rods which tie the end sills, as shown. These doors, opening the whole length of the car, the load can be discharged without using end cant-boards, while the capacity of the car remains the same as when the cant-boards are used with a hopper between the axles; nor is there any liability that the doors will be torn off, as is the case with hopper doors, should a chain or hinge break, for in such event the door would be caught on the axles.

This arrangement also admits the use of a transverse center tie-timber, as shown, which is bolted to the four longitudinal sills, the tie blocks being securely held between the lateral rods, which also hold the stake pockets in place. This adds greatly to the stiffness of the frame and relieves the end sills; while with the hopper method, the outside and inside sills must be tied together with short bolts and blocks located so as to clear the wheels. In the improved construction, the rigidity of the car is at all times maintained by tightening the nuts on the four lateral and the four longitudinal rods. The crank for opening the doors is of cast iron, and the length of lever for opening and shutting them does not exceed 18 inches. Dead blocks are dispensed with, and a single link coupling used instead of a chain coupling. The pins are prevented from working out of the draw-head, by giving them a button-head point with ¼ inch shoulder, and reaming out the button-hole in the draw-head. There is but 2¼ inches slack between the cars in running, and excessive lateral motion is impossible. The capacity of the car is four tons, and its cost about $150.

New Passenger Cars of the Fitchburg Railroad.

A number of new passenger cars are in process of construction at the shops of the Fitchburg Railroad, at Charlestown, Mass. They are substantially of the same design and construction, and combine in their details many desirable features that are worthy of special notice as illustrating the steady progress that is being made towards perfection, in providing for the pleasure and comfort of railway passengers. A description of the first one of the number, which was completed about a month ago, will answer for all.

This car is 56 feet long, and seats 68 passengers. It is mounted on 4-wheel trucks (steel wheels), and has Miller platforms and Westinghouse brakes. The exterior is painted straw color, with but little ornamentation. The interior in its every detail is admirably designed, and the result is, to produce an impression of harmony and adaptation in the general effect. This, as every intelligent observer is aware, is not always the case with the more pretentious class of passenger cars. The clear-story is much wider than usual, and gives an apparent spaciousness to the interior that is at once recognized. The ground finish is mahogany, relieved with recessed panels of ash burl, and raised panels of French walnut. The wainscotting is of black walnut and ash. The seats are 20 inches wide, and have Hale & Kilburn's springs in seats and seat backs. The upholstering is in scarlet plush, the backs are concaved for each sitter, and by a change in the pivot, can be raised so as to afford a greater width of seat. The usual nickel-plate band is dispensed with, and a comfortable head-rest provided in its stead. The ventilating appliances are very complete, and consist of 34 Globe ventilators in the roof, so placed as not to be noticed by the casual observer; also end ventilators, and the Spear stove system, which is available in summer for introducing fresh air from the outside.

At one end of the car is the lavatory, and the arrangement for supplying it with water is altogether new. Under the wash-bowl is a cylindrical tank containing water under forty pounds pressure, the pressure being obtained from the air-brake reservoir, or by means of a special air-pump in the case of cars not having the air-brake. By simply opening the faucets, the water is forced into the bowls of the wash-stand and water-closets, and by means of a 50-foot hose provided for the purpose, can be used for extinguishing fire. The apparatus is the invention of Mr. A. M. Granger.

The lighting is by four of Williams & Page's double-burner lamps; the racks and window fasteners were made by Post & Co., of Cincinnati; and the door-locks by Mr. Robinson, of Boston. The lamps, racks, seat arms and other trimmings are of gold bronze. The car is provided with two tool-boxes, one inside and the other outside, each containing an axe, bar, sledge and saw, as required by law. The cars are built under the supervision of Mr. J. W. Marden, the experienced and capable master car-builder of the road, and may be regarded, for the present at least, as models of their kind.

Locomotive Driving-Boxes.

To the Editor of the National Car-Builder:

Referring to Mr. Teat's communication in your August issue, I desire to say that the engine I mentioned as having heavy shoes was correctly and mechanically built. The shoes were shoes and not wedges, and hence the face of the forward pedestal was square with the frame. What I referred to by saying that the shaft's center was back of the center between the pedestals, was that many young bosses lay a straight-edge on the face of each pedestal—when only one wedge is used—and draw a line on the frame fair with the straight-edge, and getting a point centrally between them on the side of the frame, which is assumed to be the axle's center. The result was, as I have shown, not satisfactory. If each pedestal stood at an angle to the frame, using a wedge forward and back of the box, as Mr. Teat says he meant, the axle center would come centrally between the pedestals. But as this style is not very much used, owing to the ease with which an engine can be thrown out of square by improper adjustment of the forward wedges, what I said was in reference to the common form used at the North, where the front shoe is parallel, or in other words, a shoe and not a wedge. If Mr. Teat will read my article more carefully, he will see that the plan proposed does not require the use of any large T square, but carries a point from one frame to the other by one of the simplest problems in geometry for erecting one line perpendicular to another by means of a pair of trams. If a square were to be used for the purpose, it would be a large size draughtsman's square weighing three or four pounds, but which would hardly require several men to handle.

FRANK C. SMITH.

[As all debates must come to an end at some time, the above will close the discussion on this subject.—ED. C. B.]

Communications.

Present Passenger Locomotives and High Speeds.

To the Editor of the National Car-Builder:

If twelve or fifteen cars are to constitute the future passenger train, and the speed is to be sixty miles an hour, a radical change must be made in the design and construction of passenger locomotives. Several new engines of this class have been built which run at this rate of speed, but it does not appear that they have taken as heavy trains at such speed as the average trains that are now hauled on many roads at the rate of 30 or 35 miles an hour. Many master mechanics are of the opinion that if 60 miles per hour with 10 or 15 coaches is demanded by the traveling public, a slight increase in the present sizes of the cylinders and boilers now in use is all that is necessary to meet the demand. An examination of the difficulties which lie in the way, however, will show that merely increasing the proportions of the present type of engines will not be sufficient. It is a mechanical truth that the resistance of a moving body increases the square of the speed; or in other words, doubling the speed of a moving body requires, not twice, but four times the power. To illustrate: If a balance wheel require a constant exertion of 10 pounds to keep it at a speed of 100 turns per minute, and it is desired to increase the speed to 200 turns per minute, it require 4 + 10 or 40 pounds to accomplish it.

Applying this to the locomotive, and assuming the average speed now to be 30 miles an hour, the cylinders must be capable of giving off four times the power they now do, as the square of 30 is 900, and the square of 60 is 3,600, and this divided by 900 equals 4. Four times the quantity of steam must be generated (if the link motion is used), and to accomplish this the grate must be increased proportionally, unless by means of a stronger blast a greater quantity of fuel is burned per square foot than at present, and this is not desirable. Different authorities give different ratios of value of a square foot of heating surface in the fire-box as compared with the flues, but all agree that the fire-box is by far the most valuable source from which to generate steam. A larger fire-box would therefore be one of the changes necessary to be made to meet the new conditions. With the ordinary engine this could only be done by lengthening it; and owing to the excessive length and weight of side-rods which would then be necessary, high speed would be out of the question; and the fire-box is already as wide as the frames will admit.

The Wootten fire-box spreads over the top of the wheels, which must be made smaller in diameter to keep the center of gravity of the engine low enough, and, it is claimed, the boilers are difficult to keep tight at the fire-box end. It should, therefore, appear that a pair of driving wheels back of the fire-box is out of the question. If, now, two pairs of drivers were placed under the cylinder part of the boiler, with a single pair of truck wheels ahead of these, and another pair back of the fire-box, and both arranged to distribute part of the weight coming on them upon the driving wheels, the fire-box might be made of a width equal to a passenger coach, and of any length desirable, and thus get in as large a fire box as is necessary. It is obvious that a more economical use of steam must be made than is possible with the link motion. The success of Webb's compound engine, as well as those in use for several years past on French roads, would give much to be hoped for from the introduction of the compound principle, as it is claimed that the coal consumption was reduced from 30 pounds per mile to 22 pounds.

The Joy gear was part of Webb's scheme, but its application to the ordinary engine will not end in any material increase of fuel economy, as it is but another mode of reaching the same result as the link motion. Many eminent master mechanics prefer the link to the Joy gear, on account of the increased lead which the link gives, as it is hooked back, and which the Joy gear does not; but it does not appear that this increase of lead is of any real advantage, providing the compression is properly arranged, and sufficient lead given, say one-eighth, to insure a prompt admission on the centre. With the link motion the expansion of steam is very limited, owing to the early exhaust. If a link-motion engine is hooked up to 6 inches, and the stroke be 24 inches, as the exhaust opens soon after the piston has traveled half its stroke, it appears that little over two expansions are gained and the steam is thus liberated from the cylinder, with a reduction of but one-half its pressure. If we suppose the steam to enter the cylinder at 160 lbs. pressure, and to escape at 40 lbs., it is clear that the work stored up in the expansion of the steam from 40 down to a lower pressure, is thrown away. The compound engine accomplishes this by exhausting this 40 lbs. into another cylinder instead of into the air, where it is again expanded, and the work represented by this expansion transferred to useful effect in propelling the load. It might be claimed that this extra expansion would be detrimental by weakening the effects of the exhaust, but it must be remembered that as this expansion results in a less demand of steam from the boiler, the strength of the exhaust can be diminished with a further beneficial effect of lightening the wear and tear of the boiler and the cutting action of the cinders on the fire-box and flues. In the ordinary link motion engine, where, but 2½ expansions are obtained on an average, it is impossible to hope for anything better from this device, in comparison with the compound engine, where probably 6 to 8 expansions are gained, and by the substitution of an independant cut-off to the compound engine 17 or 18 expansions might be gained, although the effects of the exhaust might then be too weak. From seven to eight expansions, or more, might be gained in a single cylinder if an independent cut-off valve were substituted for the link-motion, although the number of expansions in a single cylinder would be limited by other conditions than the capabilities of the cut-off gear.

It appears settled that high speeds with heavy loads cannot be attained and maintained if the link motion is to be used, owing to its wasteful use of steam, and to the limited amount of power it develops when cutting off close. Cutting off at one-fourth the link will require an expenditure of water per horse-power of from 30 to 35 pounds. Any good automatic cut-off engine using the independent cut-off principle will perform the same labor on from 22 to 25 pounds of water per hour. Several years since the writer was employed by a road which was using on many of its engines the independent cut-off. As these engines were rebuilt the link was substituted for the independent cut-off. With the link they were never as smart nor as economical, and it was necessary on all of them to reduce the exhaust nozzles, thus proving that a greater quantity of steam was necessary. V-HOOK.

The M. C. B. Standard Axle and 30-Ton Cars.

To the Editor of the National Car-Builder:

If the journal of a car axle be regarded as a beam fixed at one end and loaded uniformly throughout its length, as it evidently is, we have Haswell's formula—

$$\frac{V \times B \times D^2}{L}$$

in which V is the value of the material, which is 700 pounds for wrought iron, B the breadth in inches, D the depth in inches, and L the length in feet.

Applying this to the master car-builders' standard journal, and assuming that the fracture of the journal will occur at the inner end, we have—

$$\frac{700 \times 3\frac{3}{4}'' \times 3\frac{3}{4}''^3}{7\text{-}12''} = 63{,}000 \text{ lbs.}$$

which would be the breaking strain if applied at the extreme outer end; but as the journal is assured to be loaded uniformerly throughout its length, this result must be doubled, giving 126,000 lbs. as the breaking strength of the journal if it were square. But as the strength of a cylindrical beam is to a square beam in which the diameter equals the sides, as 6.25 is to 8, we have the proportion—

$$6.25 : 8 :: \times : 126{,}000 = 98{,}437\tfrac{1}{2} \text{ lbs.}$$

as the actual strength of the journal. If the car [illegible] weigh 40 tons (neglecting the weight of the trucks) and the load is 20 tons, we have a total of 60 tons supported on 8 journals, or 7,500 lbs. per journal; so that 98,437½ divided by 7,500 gives 13 as the factor of safety; or in other words, the strength of the journal is 13 times the strain to which it is subjected by the weight of the car and its load of 20 tons.

But as it is evident that the strain upon the journal is incidental to the character of the track, no calculation, therefore, can fully meet the widely varying conditions; for while it is obvious that the journals, if subjected to a *dead* load of but 7,500 lbs., would be sufficiently strong, the strains imposed by the dropping of this weight from the end of one rail on to the end of another rail that was lower would very greatly increase the strain of the load on the journal. Assuming the weight of the car body to be 10 tons, and its load 30 tons, instead of 20, the strength of the journal would even then exceed the dead load per axle 9.84 times; and it is clear therefore that if the master car-builder's axle is, as it is claimed to be, just sufficiently strong for a load of 20 tons, the journals are not large enough for a load of 30 tons.

The dead weight of 10,000 pounds per journal would have a tendency to bend or break the center of the axle, using the wheel and rail as a fulcrum. If it is 7¼ inches from the center of the rail horizontally to the center of the journal, and 29¼ inches from the center of the rail to the center of the axle, we have:

$$\frac{10{,}000 \text{ lbs.} \times 7\frac{1}{4}''}{29\frac{1}{4}''} = 2{,}605\tfrac{1}{2} \text{ lbs.}$$

as the effect of the weight on one journal to bend the axle at the center; and for the two journals:

$$2{,}605\tfrac{1}{2} \times 2 = 5{,}211 \text{ lbs.}$$

The axle between the wheels may be considered as a beam supported at each end, the formula applying to which is—

$$\frac{V \times 4\,B \times D^2}{L}$$

in which V is the value of the material or 700 lbs. for wrought iron, B the breadth in inches, D depth in inches, and L length in feet. Assuming the center or diameter of the axle to be 3½ inches, and the length 4 feet ½ inch, we have—

$$\frac{700 \times 4 \times 3\frac{1}{2} \times 3\frac{1}{2}^3}{4\text{-}1\frac{1}{2}'} = 40{,}285 \text{ lbs.}$$

if the axle were square, and 6.25 : 8 : : × : 40,285 = 31,472 lbs. for the actual strength at the center; and $\frac{31{,}472}{5{,}211} = 6 +$ as the factor of safety at the center of the axle. The center is subjected to the incidental strain of the blow of the flange of the wheel against the rail, using the radius of the wheel as a lever.

It does not appear that the master car-builders' axle, with a car load of 30 tons, would fail from the pressure per square inch of projected area (diameter multiplied by length) as far as friction alone is concerned. A locomotive cylinder 16 inches in diameter has 201 square inches in the piston. Assuming a steam pressure of 100 lbs. per square inch, we have a total of 20,100, which is borne successfully by the crosshead wrist which we may take to have 9 square inches of projected area. This gives a pressure per square inch of 2,233 lbs., while that on the axle of a 30-ton car would be 379 lbs. It is true that the cross-head wrist or crank-pin has a better chance for lubrication, as the faces of the pin and brasses are separated at every stroke and relieved of pressure owing to the change of direction of the piston; but it still appears that the wide margin between 379 lbs. and 2,233 lbs. per square inch would insure the safety of the axle. SUTHERLAND.

Unequal Wear of Locomotive Brasses.

To the Editor of the National Car-Builder:

On engines with a center-bearing or spread-truck, it is found that the back brasses wear much faster than those in front, and various theories have been advanced as to the cause. Many engineers attribute it to the dirt and dust thrown from the front wheels, and one master mechanic has expressed the opinion that it was due to the "counter-blow." An examination of the matter makes it appear that the tendency of ordinary eight-wheel engines is to get low on the springs behind, and that owing to its greater weight and freedom of movement, the fire-box end surges and oscillates more than the front end does. When the rear end surges below the normal line, the effect at

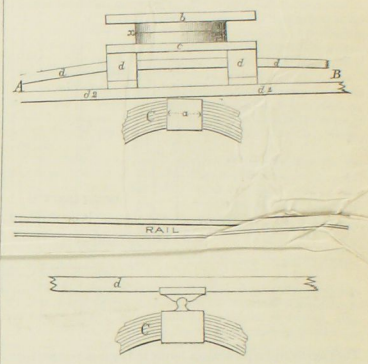


Fig. 2.

the front end is shown in an exaggerated form in Fig 1, in which B is the back end and A the front end. As the back end goes down, the half of the center-bearing b, which is bolted to the saddle, inclines from the normal line with the rest of the engine. This causes the weight to be concentrated more at the back side of bearing, as at x, which causes the entire truck frame $d\ d\ d$ to be depressed at the back end. The frame of the truck d^2 then rests on the back part of the spring saddle, C being the spring, when it is clear that the weight of the front end of the engine is nearer to the back wheel centers than to those of the front wheels by the width of the saddle a. This trouble is not apparent on an engine truck in which the saddle is fitted with a ball projection b, Fig. 2, as this evidently concentrates the weight over the center of the spring, and centrally therefore between the wheel centers. FRANK C. SMITH.

Railway Activity in Chicago.

CHICAGO, AUGUST, 1882.

To the Editor of the National Car-Builder:

Perhaps there has never been more activity in the railroad shops in this vicinity than at present. The many new roads seeking a terminus in the Garden City will be greatly favored by the belt line, which encircles the city proper, and which will be used as a distributor of freight and passengers for all the roads that are not already provided with commodious terminal buildings. The Chicago & Grand Trunk has been fortunate in securing grounds on Twelfth street for a spacious passenger station and offices, at a cost of $600,000. This company is also building extensive shops at Battle Creek, Mich. The equipment of the road is being very much improved under the general management of Mr. S. R. Callaway. Several new and handsome coaches, built at the company's shops in Montreal, have been added to the passenger rolling stock. They are of excellent workmanship. The interior finish is in native woods, and is very effective; but there is a kind of stiffness about the seats suggestive of new boots before they are broken in to the feet of the wearer. The springs are

too rigid for ease and comfort, and the upholstering is not altogether in keeping with its surroundings. With lighter springs, and something to soften the rather high arm-rests, there would be little occasion for criticism in the general details.

Many of the railway supply manufacturers, who have heretofore found room for their business in the city, are forced out to the suburbs, and in many instances large establishments are being removed to the adjacent country and located in a general way on a circular line, the irregular radius of which is from ten to fifteen miles from the City Hall. Among the supply and equipment manufacturers that have made a move to the prairies are the Morden Frog and Switch Works, which have been doing a thriving business on Pacific Avenue; but their old quarters have become too contracted for their expanding operations. Their new shops are now in course of construction at South Chicago, and will afford increased facilities that are greatly needed. The United States Rolling Stock Co. is about to build extensive shops in the same suburb for the manufacture and repair of rolling stock, the demand for which on lease is now very active. From present indications, all the available freight cars of Northern and Western roads will be needed to move this year's crop to the seaboard, and as the total production is pretty sure to increase from year to year, there is likely to be an active demand in future for the engines and cars of this company. It is said that a rolling mill is to be built at South Chicago for turning out rails 120 feet in length, but the utility of such rails is yet to be tested.

In a word, it may be said that railway business and all collateral industries hereabouts display a degree of activity that silences the croakings about an impending check to the business prosperity of the county that was so rife a few months ago.

H. S. W.

How to Turn a True Ball or Sphere.

To the Editor of the National Car-Builder:

The machinist who has never seen or been told how a true ball or sphere is turned would be a good deal puzzled in devising a plan that would give satisfactory results; and as many locomotives in use have ball valves in the pumps, the following suggestions may not be out of place.

These valves are usually of brass, and are cast about $\frac{1}{4}$ or $\frac{5}{16}$ of an inch larger than the finished size. The casting has two lugs or teats cast with it to dog it, for driving on the centers of an ordinary lathe. By means of a templet, the ball is roughed down to within $\frac{1}{32}$ of an inch of the finished size, when the lugs are cut off and the ball "chucked," as

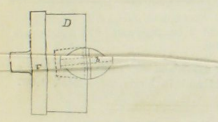


Fig. 1.

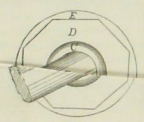


Fig. 2.

Fig. 3.

shown in Fig. 1, *E* being the face plate, *D* a wooden chuck with a recess turned somewhat smaller than the ball, to hold and drive it. A flat spot or ring *a* is hand-tooled down to within a trifle of the finished size as shown by the calipers. It is evident that this flat ring is a true circle. The ball is now tapped out of the chuck and rechucked, so that the flat ring occupies the position shown by the dotted lines *b*. With many lathemen it is customary to paint the flat ring on the ball with a black strip of pattern-makers' varnish, although, if the tool-marks left by the hand-tool when turning the flat ring are sufficiently prominent, this is not necessary. The ball is then hand-tooled until the flat ring (or the varnish) is just visible, the ball is reversed, and the other half turned down similarly, using the flat ring as a guide. It is evident that, as the ring was a circle, when the ball was changed in the chuck so that the ring occupied position *b*, it acted as a perfect guide by which the balance of the ball could be reduced. It now remains to bring the ball to absolute size and truth by means of a ball-scraper, which is a piece of steel turned and bored as shown in Fig. 3, the bore being about $\frac{1}{4}$ the size of the ball. The cutting edge *A* is to be beveled if the ball is of cast or wrought iron or steel, and without any bevel or rake for brass.

It is used as shown in Fig. 2, in which *E* is lathe face plate, *D* wooden chuck, *B* ball-scraper, and *C* the ball. The ball is reversed by $\frac{1}{4}$ of a revolution in the chuck, so that the tool-marks of the scraper cross and re-cross. In grinding the ball to the seat, it is revolved in the chuck and frequently changed in position, fed with emery and oil, and the seat, which has been previously turned out to a templet to the same circle as the ball, is held against the ball and given a wobbling motion by the hand.

FRANK C. SMITH.

Parallel Rods of Locomotives.

The following are the material portions of a paper on this subject presented at the recent Master Mechanic's Convention by Mr. Howard Fry:

"Side rods have very commonly been considered one of the necessary evils in locomotive construction, since the time when the earliest engineers discovered that the tractive force of one pair of wheels was not sufficient to haul heavy trains.

"The duty of a side rod is to transmit a rotary motion from the main driving axle to other parallel axles: to do this it must be stiff enough to transmit a thrust along its length without buckling. At high speeps it must be sufficiently strong to resist its own momentum: it must also have ends forming good bearing surfaces.

"There are many rods still running of a circular section throughout. These are cheap of manufacture, but being of the same rigidity, both vertically and horizontally, they are disproportioned. This was improved upon by making rods of elliptical section, but this was too expensive for a finished rod. A favorite way with some builders of heavy freight engines, is to make their rods thick as well as deep rectangular bars. This is when the engine is not expected to run fast. Passing from this we find the ordinary proportion of rod to be about $1\frac{1}{4}$ in. by 4 in.; and we have on a great many railroads a rod with the middle section of about $1\frac{1}{4}$ in. multiplied by 5 in., that is, four times as deep as broad.

"Several attempts have been made of late years to find a lighter section of rod which will at the same time be stiff and cheap. In Germany, and also in this country, an I-beam section of rod has been used. The finished section of this rod will be found to be lighter than the ordinary rectangular section, the strength being mainly in the top and bottom flanges; and this section leads to a rod which is worthy of more consideration than it has hitherto received, simply two round bars of iron connected at the ends by brass castings. These rods have been used on switch engines and have given satisfaction. There is a curious divergence of practice with regard to the section of rod throughout its length. Uniformity is the usual rule, but a large number of rods increase in depth toward the center, in some cases as much as 1 in. One rod thickens in breadth toward the centre $\frac{1}{4}$ in., this being done by planing the rod while in a bent condition, while another excellent rod is thinned out in the middle from $1\frac{1}{4}$ in. at the ends to $1\frac{1}{4}$ in., while at the same time its depth is increased from $4\frac{1}{4}$ in. to 5 in., thus lessening the section from 8 square inches in the ends to $6\frac{1}{4}$ square inches in the middle, and at the same time keeping the vertical strength the same throughout. This rod is made of steel.

"A heavy side rod is such an impediment to an engine's rapid progress that the lighter it can be made the better. A very heavy rod, brought to our notice, weighed 314 lbs. Other weights of manufacturers' standard rods are 302 lbs. and 320 lbs. On the other hand another rod, though but 9 in. shorter, weighs only 170 lbs., and is used for very fast traffic. Between these we have a great variety of weights. The rods of I-beam section are lighter than those of rectangular for equal strength; but a proper proportion of web to flange has not yet been reached in practice.

"With regard to rod ends there are three different systems. One type is that of a strap holding the brasses and secured to the rod by two or three bolts, and pierced by a cotter to take up wear. Another method is to forge the rod ends solid, and to form a wearing surface by inserting either ordinary brasses and cotter or a solid bush made of brass or white metal. The objections to the former are the loss of power in working the heavy eccentric strap, to the top, and secondly, the weakening of the strap by piercing it with bolts and square cotter holes, and thirdly, the liability of cotters to come loose.

"The disadvantages, on the other hand, put forward against solid ends, are that the wearing surfaces are not adjustable. As there is much to say on each of these methods, we will first consider the strap end.

"All rods with a strap require a large mass of metal for the strap bolts to pass through, as well as room for a cotter. This has been ingeniously modified in one instance, by placing the cotter between the two bolts, which necessitates, however, slotted bolt-holes in the rod end. A more direct way of tightening the end is to cut a large hole in the useless mass of metal.

"A still further step in the lightening of rod ends was taken by substituting solid bushes for adjustable brasses; and this method, so light, so secure, and so exact in its centers, is coming into general use. The rod end, which is generally of one piece with the rod and of steel, is bored out in a boring mill, the last tool used being a reamer of standard size, and a bush is pressed into this hole by hydraulic or other means, the pressure used being about 35 tons, and is then secured, either by a taper pin passing through the joint, or by a key cast on the bush, the latter being riveted over when in its place. These bushes, when made of white metal, are cast in iron chills, and need no machine work until after they are pressed into the rod, when they are bored out under a mill with tools a standard distance apart. With rods of this description it is easy to avoid getting brasses too tight or out of center, and if one rod fails the rod on any other engine can be substituted for it.

"Some engineers in Europe have fitted their brasses into ball joints in order to give the wheels more lateral freedom, but the extra expense and double wearing surface can scarcely compensate for the very small advantage claimed. The rods of a very heavy 8-wheeled coupled engine on the Paris, Lyons & Mediterranean Railway are equipped with these ball joints. All the wheels are flanged, and in order to get the engine to traverse curves of 580 ft. radius, 1 in. side play in each direction is allowed in the leading and trailing axle boxes, and spherical or ball bearings in the side rods were necessary to allow this. There were 90 of these engines in successful use in 1880, with cylinders $21\frac{1}{2}$ in. in diameter, 26-in. stroke, climbing grades of 1 in 33, and were first adopted in 1869.

"There is a tendency among some engineers to lessen the strokes of the side rod, which, however, can of course only be done on inside cylinder engines. As one instance of this, a 7-ft. diameter 4-wheel coupled passenger engine, recently designed, with 19-in. by 26-in. cylinders, has a coupling-rod throw of only 18 in.

"The breadth of bearing for side rods is an important item in their length of service, and it is unfortunate that about $3\frac{1}{2}$ in. seems the greatest breadth obtainable for outside cylinder engines.

"Iron is still generally used for side rods, although steel is rapidly coming into favor; but we have no data to show that the weight of rod has been correspondingly reduced. Where steel has been adopted a better section has generally also been used, which enables the rod to be lightened.

"Of the various mixtures of bearing metal each has its advocates; but phosphor bronze has been so successful that most bushes for solid-end rods and many sectional brasses are now made of it.

"White metal bushes are very cheap, owing to the small amount of machine work on them; but they sometimes work loose, which is probably due to the continued knockings which must more or less alter their shape. A good mixture for such bushes is, tin 16, antimony 2, copper 1.

"The cheapest rod is still the old strap rod, partly owing, no doubt, to the fact that what has always been made is easiest made. That the next cheapest is the solid bushed end, although with fluted sides, which is, as we have seen, the best rod where standard lengths can be maintained, and which bids fair, with a little practice, to be as cheap a rod to manufacture as the common strap-ended one; and lastly, that the soild-end, with brasses and cotter, is the most expensive.

"A great deal might be said on the time spent on finishing off rods. An engine is supposed by many people to be handsome when its parts are polished and its colors brilliant, and to accomplish this much valuable time has been spent and acres of emery cloth used. It is now more easily done by means of emery wheels, and some rods are allowed to go out straight from the grindstone and be painted. One of the largest railroads in England does not permit the rods to be touched after they come from the planer, but considers that a rod looks best when it shows least sign of laborious work. For a similar reason much of the bevelling of edges has been discontinued, especially in busy times, when it is necessary to get out work quickly."

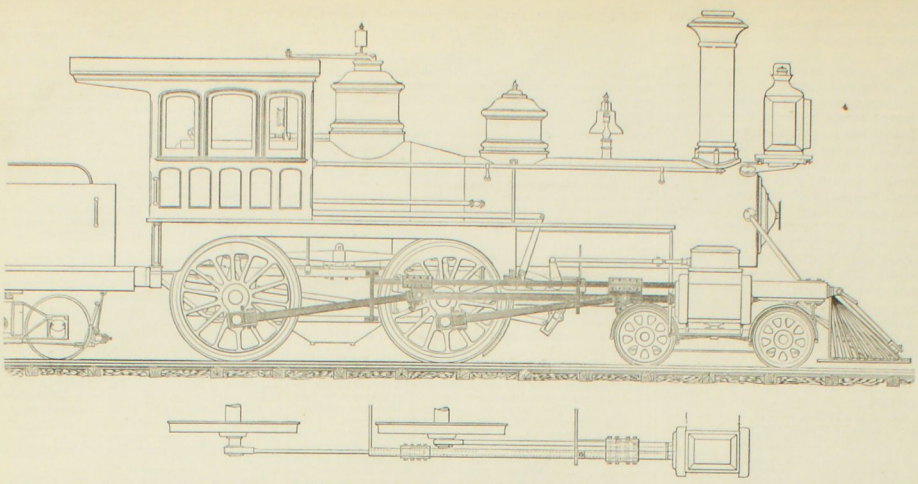
The Waldumer Electro-Magnetic Brake.

This newly patented brake was recently tried on the New York, Woodhaven & Rockaway railroad with very satisfactory results. The mechanism consists of a dynamo-electric generator stationed on the running board of the locomotive and operated by a rotary engine of one-horse power, which is only in motion when the brake is being set. The force of the current is regulated by the speed of the rotary engine. The brake is set by a throttle-valve the same as with the air brake. Two copper wires run from the dynamo generator under the tender. There is a flexible terminal between the cars and the coupling which disconnects automatically when the train separates. The wires run through a magnet 4 inches in diameter and 15 in length overlaid with insulated copper wires, which is practically a part of the axle and revolves with it. It is surrounded by an armature consisting of nine bars, which are engaged in the drum surrounding the whole. Its operation is such that when the current is turned into the wire of the magnet the bars are attracted and adhere to the magnet with a force proportionate to the strength of the current applied, causing the drum to revolve and wind up a chain communicating with the ordinary hand-brake [illegible]. By a system of leverage the initial power is increased 80 times at the point of application. The brake is released by simply stopping the rotary engine. The steam which works the rotary engine detracts nothing from the effective power of the locomotive, because it is used only when the steam is shut off from the locomotive. When attached to ordinary freight trains a "reserve generator" will be placed in the caboose which supplies the power that operates the brakes in cases of accidenta uncoupling or breaking.

The train with which the trial was made consisted of four empty box cars and a passenger coach. Several trips were made at a speed of 25 miles per hour, and by the application of the brakes to the box cars alone the train was stopped without perceptible jar in less than its own length. With the train running at the same rate, the rear car was detached, and solely by the automatic action of the brake the isolated car was brought to a standstill within a distance of 60 feet. The inventor, Mr. A. L. Duwelius, claims that by this system freight trains can be brought to a halt by a uniform application of perfectly regulated force to each car of the train, thus placing them under as complete control as are passenger trains with the air brake.

The office of the Waldumer Electro-Magnetic Brake Co. is 17 West Third street, Cincinnati, and the officers are as follows: President, H. D. Peck; vice-president, Hugo Walter; secretaries, A. L. Duwelius and Frank R. Merrill; general manager, L. W. Goss.

DURING the past year the Baldwin Locomotive Works have been introducing a steam reversing gear, which is spoken of as working very well. It was put upon No. 169, built for the Central Railroad of New Jersey. During the past year several engines on the Pennsylvania Railroad have been fitted with steam reversing gear designed by Mr. Vogt, of the Altoona shops. He has also brought out an hydraulic reversing gear, worked by water from the boiler. The immense size of the engines used upon fast passenger trains has made something of this kind absolutely necessary, as the valve motions are altogether too large and heavy for easy and certain handling. As the engines generally increase in size some arrangement of this kind will, no doubt, have to be generally adopted. The hydraulic gear has certain very great advantages in the way of freedom from leakage and avoiding trouble with condensation. Each succeeding year shows the number of parts greatly reduced and an advance made toward simplicity.—*Mechanic.*



STRONG'S LOCOMOTIVE DRIVER-COUPLING.

The engraving represents an improvement in locomotive construction designed by Mr. George S. Strong, of Philadelphia, the object of which is to do away with side-rods and provide for a greater freedom of action and a greater range of distance between centers of drivers. As will be seen from the engraving, the device consists of an auxiliary cross-head running outside of forward driver, and coupled with the main or forward cross-head by a straight bar having only one motion, which is that of the piston. From this auxiliary cross-head, the rear driving-wheel is driven the same as the forward wheel is from the regular or front cross-head. The distance between centers of cross-heads is the same as between centers of drivers, and consequently the action and angles are always alike on both wheels; and as the motion of the connecting link is in a straight line, there is no danger of its breaking; it can be made of any length within the limits of wheel base, and the drivers can be spread so as to admit of a longer fire-box. This, with soft coal burning locomotives, is very desirable. There is also a better distribution of wearing surface on brasses of crank-pins than in the ordinary construction, where the power for both wheels is transmitted through the forward pin. The pounding upon the rails and flattening of tires of the front drivers are also obviated, such pounding and flattening being caused by transmitting the power to the rear wheel through an angle, and at the same time the arresting of the downward throw of the side-rod, which, in a speed of fifty miles an hour, strikes a blow of many tons, and from 250 to 300 times a minute, such blows coming directly on the crank-pins and through the driver to the rail, while the center of the rod is thrown downward with a great tendency to go into the ground.

The practicability of attaining higher speeds with our present weight of trains, is a question of increasing importance in this country, with its long lines of road, and where time is so valuable. Single drivers can not be used with the same advantage as in Europe where the road beds are better and the trains lighter. We understand that Mr. Strong's method will soon be subjected to a thorough test in practical service. His address is corner of Seventh and Chestnut streets, Philadelphia.

Capacity of Freight Cars.

At the present time, when car builders are considering the feasibility of 30-ton freight cars, and finding that for these cars even the Master Car-Builders' standard is none too large, it is interesting to look back at the vote on the sizes of journals taken at the Boston meeting of the Association, in 1873, when the standard axle was adopted, and to see what the opinion of the Association was upon the matter of sizes of journals. Looking over our notices of that meeting, we find that there were less than half a dozen of the members who were at that time in favor of a journal of more than $3\frac{3}{4}\times7$. There were, however, a half dozen who voted for 4×7 or larger. We think even the most conservative men who then considered a $3\frac{1}{2}\times6$ amply large for the requirements of that day, are now convinced that the Car-Builders' standard has none too large a journal for a 30-ton car, and that a 4×7 would possibly be preferable.

It is a question of no small importance at present, when larger freight cars are imperatively demanded by the growing traffic, whether the size or the number of journals shall be increased. It is even suggested that the number of trucks be increased, that a 12-wheel car with 3 trucks, rather than a car with two 6-wheel trucks, be employed. With three 4-wheel trucks a car could be considerably lengthened so as to make it equivalent in its framing to two cars with a door in the middle between them. In going round curves very peculiar strains would undoubtedly be set up in the framing, by the fact that the point of support in the middle would be considerably to one side of the center line of the car. The material increase, however, in the load to be carried would allow a large margin of freight in the frame, while the ratio between dead and paying weight would be reduced, the larger load being obtained with a comparatively slight increase in the dead weight and a considerable increase in strength.

The increased capacity of freight roads is developing some interesting problems in car construction. It may be found that with the increased facilities for handling iron and rolling shapes of almost any desired section, that an iron floor framing for freight cars can be obtained both stronger and cheaper than one of wood. If this is done, may it not be possible to dispense with any timbered side framing, and make the covering and sides of the cars merely strong enough to sustain their own weight and the ordinary shocks incident to traffic? If this is once done without depending on the sides for support, an enormous advantage will be gained in the way of lightening the body, dispensing with timbered framing, which is essentially weak, and which, by reason of a large door opening, fails to obtain very essential points for a perfect truss. Braces and struts are of necessity left out of the doorway of an ordinary car, and thus one very important panel of the truss has to depend for its stiffness upon other members. In an iron car the strength of the floor beams is much greater than that required for carrying the load.—*Iron Age.*

Straight Tread and Coned Wheels.

Mr. H. L. Preston, Master Car-Builder of the Chicago & Northwestern Railway, is reported by the *Railway Age* as decidedly favoring straight tread wheels to coned ones. The former he regards as safer and much more durable. Coned wheels, he says, have a tendency to press outward upon the rails and spread the track. They also bear on a very small surface, as when the cars are heavily loaded and the rails and wheels are new, the 8 wheels of a car stand on less than 1 square inch of surface, thus breaking the fibre of the steel rail and also the chill of the wheel. Moreover, on account of the coning, even when running on straight track, the wheels take a zigzag motion which throws them from one side of the rail to the other until the chill of one of the wheels gives way and the wheel becomes smaller than the other, which gives it a tendency to hug the rail until the flange is worn so sharp that the wheel has to be removed. In case the wheel is slid by the brake, as it only bears from $\frac{1}{16}$ to $\frac{1}{4}$ of an inch on the rail, it at once cuts the rail and the chill of the wheel, and as the brake is applied thereafter it has a tendency to stop on the same spot and cause a flat wheel. What is claimed over the coned wheel for the straight-tread wheel, is, first, that if the wheel stands upright and straight on the head of the rail, covering the surface and running straight, it will carry more dead weight with greater safety, and last longer on a 35 pound rail than a coned wheel on a 42-pound rail. Also, that it gives the rail from 15 to 20 per cent. more wear, as there is not as much flange work and the cars run much steadier. It is also claimed that there is at least ten per cent. less wear on the brasses and collar of the journals. Mr. Preston says that in his opinion, the straight-tread wheel, with swing motion or suspension truck, will save at least 50 per cent. in the life of the wheel.

Recent Reports of Railway Rolling Stock.

Chicago & Northwestern.—558 engines; 235 passenger, 13 parlor and dining, 117 baggage, mail and express cars; 10,140 box, 1,436 stock, 2,499 platform and gondola, 3,857 ore, 244 caboose, and 109 miscellaneous cars—total cars, 18,640.

Terre Haute & Indianapolis.—48 engines; 21 passenger and 20 baggage, mail and express cars; 351 box, 94 stock, 105 flat, 934 coal and 12 caboose cars; 54 service cars—total, 1,591 cars.

St. Louis, Vandalia & Terre Haute.—32 engines; 15 passenger, 8 baggage and 2 express cars; 682 box, 211 stock, 91 flat, 253 coal and 22 caboose cars; 3 wrecking and tool cars, 89 gravel and 10 rack cars—total cars, 1,393.

Galveston, Harrisburg & San Antonio.—37 engines; 19 passenger, 7 sleeping, and 7 baggage and mail cars; 234 box, 121 stock and 487 flat cars; 93 service cars—total, 968 cars.

Buffalo, Pittsburg & Western.—33 engines; 20 passenger, 3 combination and 7 baggage and mail cars; 124 box, 660 gondola, 45 oil-tank, 10 oil-rack and 10 caboose cars; 20 wood cars, 2 wrecking cars and 1 snow-plow—total, 902 cars.

Ohio Southern (formerly Springfield, Jackson & Pomeroy)—19 engines; 3 passenger and 2 baggage cars; 878 freight cars and 3 service—total cars, 886.

Flint & Pere Marquette.—62 engines; 43 passenger, 10 [illegible] and sleeping and 15 baggage, caboose and way cars; 16 service cars and 2 snow-plows; 85 hand and 75 lorrie cars—total, 1,997 cars.

Railway Traveling in Switzerland.

A correspondent of the Louisville *Courier-Journal*, writing from abroad, says: "Switzerland's railroad system is second to none in Europe. There is little display, and the average running time is elsewhere excelled, but in a country like this, where so large a proportion of travelers is of the tourist class, rapid transit is not essential. In fact, it is not desirable to be whirled along too rapidly through a region in which so much that is pleasant for the eye to rest upon abounds. The speed is about 25 miles per hour. What railroad patrons most desire is safety, good, comfortable cars, reasonable rates and polite attention. These are all afforded on Swiss lines. The officers, high and low, are polite and obliging, the track is kept in excellent condition and the cars are invariably clean, convenient and airy. Like American coaches, the entrance is at the end instead of at the side as is the case on all other foreign roads. The excellent system of first, second and third class coaches exists here as everywhere else in Europe. We shall have to come to this in America some day, where the very poor, if compelled to travel, must pay just as much as the very rich. The third-class cars have some advantages even over many of those of the higher classes, besides being much cheaper, a fact which the frugal and economizing European properly appreciates. They are about the length of American coaches, although not near so heavy, with the entrance at the end and aisles through the center. The seats are stationary and face each other. They are not upholstered, but are nicely varnished and always kept scrupulously clean. Being open—that is, not subdivided into compartments—the air circulates more freely, and in summer they are much pleasanter than the higher-priced carriages."

It is said that the Pennsylvania Railroad has a new engine named "Jumbo," with 7-foot drivers, and that it pulled a train (number of cars not stated), from Philadelphia to Jersey City in 80 minutes. Whether it pulled the same train back to Philadelphia in the same number of minutes, and whether it is to keep on running at this remarkable rate between the two cities, we are unable to say. The probability is that the 80-minute run was a "parade" performance not intended for every-day repetition.

STRONG'S FEED-WATER HEATER AND PURIFIER FOR LOCOMOTIVES.

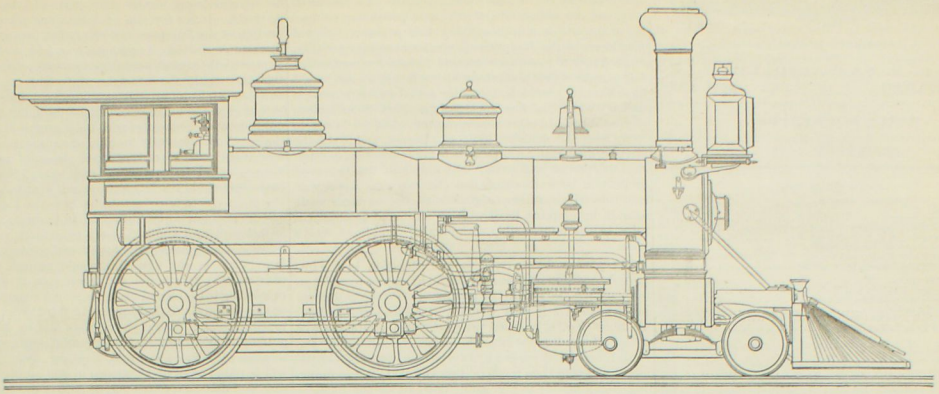


Fig. 1.

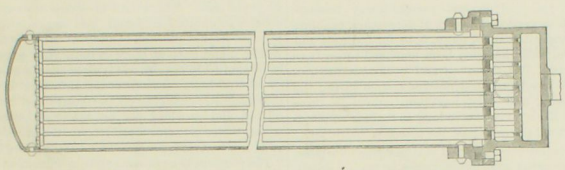


Fig. 2.

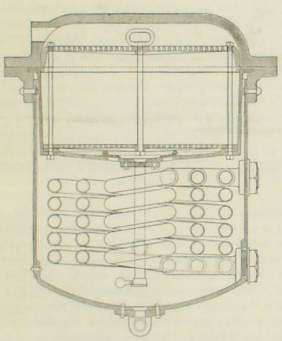


Fig. 3.

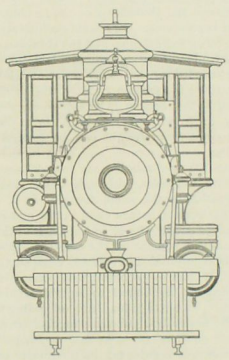


Fig. 4.

MANY attempts have been made to heat the feed-water of locomotives, with more or less success—generally with less—until it has become a pretty general opinion among railroad men that a feed-water heater cannot be made to work satisfactorily on a locomotive engine. Mr. George S. Strong, of Philadelphia, has, in the face of this adverse opinion, devised an improvement upon this class of apparatus, the nature of which is illustrated in the engravings. Having spent a number of years in developing a system of heating and purifying water for stationary boilers, he concluded to try it on locomotives. Recognizing the fact that the chief defect in the feed-water purifiers that have hitherto been tried, has been the want of some means other than merely exhaust steam, of heating the water to a temperature high enough to separate from it the scale-forming elements, he has devised a method by which the water can be heated sufficiently for this purpose before being admitted into the boiler, while the apparatus by which this is accomplished is located so as to be out of the way, and at the same time be of sufficient bulk to handle the quantity of water used.

Fig. 1 is a side view of a locomotive to which the heater and purifier are attached, the former to the side of the boiler, and projecting outside the drivers, and the latter under the forward end just back of the truck; Fig. 2 is an enlarged section of heater; Fig. 3, a section of purifier showing live steam coil at the bottom; and Fig. 4, a front view of engine showing position of heater or end view of same. The heater is a cylinder made of lap welded boiler flue, and is about 13 inches in diameter and 12 feet long. To one end of it is bolted a cast-iron head having two chambers separated by a diaphragm. Into this head are screwed 60 brass tubes of 1 inch outside diameter and 12 feet long, and having a heating surface of 180 square feet. In each of these tubes is one inner tube, which is screwed to the diaphragm and extends nearly to the ends of the outer tubes. They are designed only to increase the circulation.

The exhaust steam for heating is taken from both sides of the engine alike, one side being connected with the chamber which communicates with the heating or outer tubes, and the other with the chamber which is connected with the inner or circulating tubes, so that the play of the exhaust between the two sides on the quarter beats, causes a backward and forward circulation through the tubes without discharging any steam except what is condensed, and carried off through a drip; and as only about 12 per cent. of the exhaust is condensed, the blast is not materially affected thereby, and what is thus taken away is more than compensated for in units of heat. The exhaust is taken from the exhaust pipes in the saddle, by tapping a 2-inch pipe into each and by screwing in a nipple having a half cap on the end, which carries back sufficient steam without interfering with its free passage.

For purifying the water after it has been heated by the exhaust, Mr. Strong has arranged a combined superheater and filter, as shown in section (Fig. 3). It is located under the boiler next the truck, and swung on trunnions between the frames. Into this superheater the water enters from the heater, and is increased in temperature about 50° by the live steam coil shown in the lower part, or from 212° to 262° Fah., which high temperature causes a thorough chemical disunion of the lime and scale, after which these impurities are filtered out by the filter above the coil, composed of charcoal and bone-black firmly held between perforated plates. The water, thus deprived of its impure elements, passes directly into the boiler; and by opening the blow-off cock at the bottom of the purifier, and drawing the hot water back through the filter, all the accumulated scale forming matter is blown out.

A test of the heater was made a short time ago on the Chicago & Alton road by running a train of the same number of cars the same distance, and under substantially the same conditions, the engine having the heater attached during one trip and running without it while making the other. The result was that the train with the heater showed a comparative saving of 2,442 lbs. of coal, and an increase of 1.09 lbs. of water evaporated per pound of coal consumed.

Mr. Strong is perfecting a system of purifying water at water stations before it is pumped into the tender tanks, which will be noticed in a future issue.

Wilson's Improved Freight Car.

A new freight car designed by Mr. Thomas L. Wilson, of Port Hope, Canada, arrived at Jersey City a few weeks ago, bringing a 30-ton load of pig lead from Chicago as a test of its capacity. The car is 34 ft. long by 8 ft. 6in. wide over sills. Its stenciled weight is 27,000 lbs., and its capacity 54,000 lbs. In its construction it is peculiarly adapted to the carrying of grain, although it can be used equally well for other kinds of freight. Below the car floor are two hoppers, each with a capacity for 100 bushels of wheat, and located mainly over the trucks, the deepest part reaching below the axles. In order to utilize the upper portion of the space occupied by the hoppers, the floor of the car is five or six inches above the usual height, but can carry 800 bushels of grain above the floor, making a total load of 1,000 bushels. The advantages claimed in behalf of this arrangement are:

A maximum carrying capacity of 30 tons; the lowering of the center of gravity below the usual point by the depth of the hoppers, which reaches two feet below the sills, giving to the car a steadier motion and distributing a greater portion of the load over the trucks; the hopper frames between the wheels prevent the trucks from slewing in case the car gets off the track; a cargo of grain or coal can be discharged by means of the hoppers without manual labor; and a larger proportion of paying weight per car and train can be carried, the resulting advantages of which will be apparent to every railroad man.

The car is well and strongly built, and is said to cost about $100 more than an ordinary box car of the same dimensions. It has 600-lb. wheels, M. C. B. standard steel axles, and concave plate elliptic springs, which are represented by Mr. Wilson to be more serviceable than the flat plate springs, without additional cost. The car is said to have run 12,000 miles with full loads and without any unusual wear and tear. So far as appears, it not only meets the growing demand for increased carrying capacity, but it is also adapted to the carrying of miscellaneous freight, as well as grain.

OF the persons killed by railroad accidents in Great Britain last year, by causes beyond their own control, the proportion was one to 27,050,435. The proportion of the injured was one to 630,354. The totals were 108 passengers killed and 1,854 injured, and of employés 531 killed and 3,445 injured. From trespass, suicides and miscellaneous causes death came to 467 persons, and injuries to 265. The risk of travel is seen to be extremely low.

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EDITORIAL ANNOUNCEMENTS.

Addresses.—*Business letters should be addressed, and drafts and money orders made payable, to* THE NATIONAL CAR-BUILDER. *Communications for the attention of the Editor should be addressed* EDITOR NATIONAL CAR-BUILDER.

Advertisements.—*Nothing will be inserted in this journal for pay,* EXCEPT IN THE ADVERTISING COLUMNS. *The editorial department will contain our own views and opinions; and the rest of the reading matter, aside from advertisements, will be such as we consider of interest to our readers.*

Contributions.—*Articles relating to railway rolling stock construction and management, and kindred topics, by those who are practically acquainted with these subjects, are especially desired. Also early notice of changes in railroad officers, organizations and names of companies.*

Special Notice.—*As the* CAR BUILDER *is printed and ready for mailing on the last day of the month, advertisements, correspondence, etc., intended for insertion, must be received not later than the 25th day of the month.*

SUBSCRIPTIONS *to the* CAR-BUILDER *will be received, and copies kept for sale, at the following places:*

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FREIGHT AND PASSENGER TRAFFIC.

We compile from "Poor's Manual" for 1882 the accompanying table, showing the relative increase of freight and passenger traffic on ten of the principal railroads for the past five years, or from 1877 to 1881 inclusive. The table, as will be seen, includes the entire Pennsylvania system of lines east and west of Pittsburg. The mileage of a few of these roads has been considerably increased during this period, but the comparative results are not very materially affected thereby. As might be expected, the freight mileage has increased enormously in the aggregate, and, with one or two exceptions, the increase seems to be pretty fairly distributed among the several roads, the average being 80 per cent of the mileage and 49 per cent of the earnings of 1877. This is but a continuation of the previous development of this branch of traffic, and wonderful as it is, can readily be accounted for when all the conditions upon which it depends are duly considered. It is sustained and accelerated by the ever-increasing products of a vast territory, and the industrial activities of a population increasing at the rate of a million and a half a year. Railroad men have, by the discipline of experience and competition, learned how to move an enormous freight tonnage with a fair margin of profit, at rates which a few years ago would have been very much less than the actual cost of moving a tonnage which had then apparently reached the maximum of possibility. In other words, they have learned how to do away with the delusive limit of distance, and make the increase of quantity compensate for the reduction in rates. And this process will go on. Not only will the increased production be transported, but the carrying capacity of railroads will continue to grow with the demands made upon it, by adapting itself with an unlimited flexibility in rates to the innumerable and varying conditions which arise.

Our purpose, however, is to call attention to the improved condition of passenger traffic in respect to mileage and earnings, as shown in the table. For several years previous to 1879 it was virtually at a stand-still, making no more than a nominal progress. But within the five years embraced in the table the passenger mileage of the roads increased 40 per cent., a very large proportion of the increase having been made in 1880 and 1881, and amounting comparatively to just about one-half of the increase in freight mileage and earnings. Owing to the radical difference in the two classes of traffic, this is certainly as much as could be expected. The causes of the improvement are quite obvious, and may in a general way be attributed to the sudden and extraordinary business activity which succeeded the years of depression, enabling the mass of people to travel more, both for business and pleasure. The traffic has also been managed better than it formerly was. The suburban and excursion features of it have been developed in a marked degree during the past three years, and what has been gained in these respects is not likely to be lost so long as there is no revulsion in the general prosperity of the country.

It is not of course to be expected that passenger business, as a whole, can under any circumstances be made a source of profit to the same extent as freight business; but it is a question whether it has been developed as much as it might have been, or will be in future. There is a distinction between the two that can not be obliterated by any artificial regulations. One deals exclusively with persons and the other with things, and the things can be classified and discriminated to an unlimited extent to meet every varying condition that may arise, while, as respects persons, there is a certain rigidity and fixedness that can not be altogether broken up by any practicable system that is likely to be suggested. All sorts of articles in the general category of freight can be carried on the same trains, the same distances, and even in the same cars, at rates per 100 lbs., ranging say from 30 cents to 100 cents for a thousand miles, although the actual cost of the transportation is the same for all. In a word, freight traffic is of such a nature that, in the matter of charges, it can accommodate itself to the needs of the shipper and to almost every phase of the markets. Passenger traffic cannot be manipulated in this way except to a very limited extent. It has to contend with many disadvantages which are not incidental to freight traffic—heavy and costly cars; an average load not exceeding 60 persons per train; the necessity of making regular trips, and of running two or three times as fast as freight trains with a correspondingly heavier tax on the motive power; incumbrance of free baggage and free pass dead-heads; and the tendency of postal, telegraph and express facilities to diminish its revenues. Of all these, the heaviest millstone it has to carry is perhaps the drawing-room and sleeping-car equipment. This it must always carry, because it is the attractive and showy side, the front, as it were, of the railway system, its showiness and costliness being the popular index for gauging the enterprise and standing of the respective roads in their relations with the traveling public. Under the spur of competition, our railway companies, in their zeal to head off rivals, have a little overdone the thing in the matter of fine cars. The public demand for luxurious accommodations is not easily satisfied, but grows by what it feeds upon. Something more and better is wanted, whether attainable or not.

It is very evident that freight and passenger traffic can not be developed in the same way and by the same methods. It is a favorite idea with many that the introduction of the European system of class cars would tend to increase the volume of passenger travel by enabling people to classify themselves according to a scale of fares, and in this way apply the principles of freight transportation, partially at least, to passenger traffic. Something like this may be tried here one of these days, but just at present it does not harmonize with the "genius of our institutions." To realize fully the alleged advantages of the system, there must be at least four classes of cars, and all classes on all trains, through and local. Passengers in each class would reach their destination at the same time, the difference in fares not being based on a difference in speed, but solely on the difference in the style of the cars, or between hard and soft seats, paint and varnish, bare floors and Axminster. The high toned conductor upon entering cars of the first class, would remark in sweetest cadence, "Tickets, ladies and gentlemen if you please;" proceeding to the second class, he would tone down a note or two and say, "Tickets, please;" third class, "Tickets;" fourth class, "Shell out your tickets and be lively," thus graduating his politeness to suit the different grades of passengers. It is more probable, however, that class trains will be found more advantageous in this country than class cars, and that such trains will be moved at rates of speed corresponding to the difference in fares, the lower the fares the slower the speed. Another method that has been proposed is a system of regularly graduated fares according to distance, and the number of miles traveled in a given period of time. This would involve a thoroughly comprehensive commutation system, and appears upon its face to be altogether fair and equitable. But when analyzed it will be found to be no more so than such a system would be as applied to freight. It is after all a sort of cast-iron system, taking no account of the difference in roads, and the constantly changing circumstances that must be considered and provided for by the experienced passenger agent, whose sole aim is to increase the average train load at as low an average rate of fare as will afford a profit.

The problem is beset with endless complications, many of which are exceedingly difficult to deal with in the attempt to mature anything like a definite and comprehensive system or systems applicable to suburban, excursion and general traffic. Even if it were possible to make our passenger cars twice as fine and twice as comfortable for their occupants as they now are, with no higher rates of fare, it is doubtful whether it would increase the mileage or receipts; nor is it certain that these would be increased if the cars were less fine than they now are, and the fares considerably lower; but we think if the experiment could be made, the low fares would tell favorably upon earnings, as they certainly would upon the mileage.

LESSONS OF THE FREIGHT HANDLERS' STRIKE.

The collapse of the freight handlers' strike is a sorry lesson for the strikers, and we are not sure that the strike itself is not a lesson for the railroads. It was the principle involved that concerned the roads, and not the three cents an hour. If the demand had been for one cent instead of three it would have been resisted with just the same obstinacy, because to yield to it would have opened a sluice that would have widened into a general revolt and given encouragement to all other employés to make arbitrary demands for an increase of pay. It was this aspect of the case that made it bad for the strikers, however just, abstractly considered, their demands might be. Had they been capable of thinking for themselves, and of thinking wisely, they would have seen the end from the beginning—and this for several reasons.

A strike, to be successful, should include all, or nearly all, who are ready to compete for employment in that particular department of labor. Those who engage in the strike should be sure of the means of support during its continuance, for a starved garrison can do no otherwise than surrender. They should also be sure that the employers are not more able to stand the losses and inconveniences

ROADS.	FREIGHT. Tons carried 1,000 miles.		Per cent of increase.	Earnings.		Per cent of increase.	PASSENGERS. Passengers carried 1,000 miles.		Per cent of increase.	Earnings.		Per cent of increase.
	1877.	1881.		1877.	1881.		1877.	1881.		1877.	1881.	
New York, New Haven & Hartford	39,646	116,611	194.1	$1,326,707	$1,903,730	43.5	111,642	152,730	36.8	$2,381,905	$2,755,438	15.6
New York Central & Hudson River	1,619,948	2,646,814	63.4	16,424,817	20,736,750	26.3	316,847	373,767	17.9	6,576,816	6,958,038	5.8
Pennsylvania, and Penn Co.	3,640,223	6,604,667	81.4	21,961,447	32,572,448	48.3	543,097	811,182	49.5	7,239,246	10,167,109	40.4
New York, Lake Erie & Western	1,114,586	1,984,395	78.	10,647,807	15,979,577	50.	170,888	200,484	17.3	3,222,090	4,041,267	25.4
Boston & Albany	313,823	417,109	32.9	3,765,295	4,328,906	15.	103,278	135,421	31.1	2,386,472	2,668,045	11.8
Lake Shore & Michigan Southern	1,080,005	2,021,775	87.2	9,476,607	12,659,987	33.6	198,117	297,953	50.5	3,203,200	4,134,789	29.1
Chicago & Northwestern	485,358	980,523	102.	9,005,279	14,414,151	60.	116,902	164,383	40.5	3,378,295	4,158,130	23.1
Chicago & Alton	211,947	447,010	110.9	3,067,769	5,546,870	80.8	40,743	92,847	128.	1,211,852	1,697,541	40.1
Illinois Central	249,346	386,035	55.	3,032,337	3,718,46	22.6	46,076	82,068	80.	1,037, 91	1,208,780	16.5
Union Pacific	334,645	783,331	134.	7,597,681	17,063,127	124.5	107,833	153,570	42.4	3,590,756	5,131,571	42.5
Totals and p. c. of increase	9,089,527	16,388,270	80.3	$86,305,946	$128,924,014	49.5	1,695,333	2,374,355	40.	$34,237,223	$42,920,714	25.3

of the stoppage of their business than the strikers are to stand the stoppage of wages; and especially should it be taken into account whether the strike is precipitated on a falling or an advancing market for the products of the labor which is withheld. It should be considered how far the labor is skilled labor, and whether the requisite skill is so slight that raw hands can acquire it in a month or a less time. It should also be borne in mind that the home supply of common laborers is pretty large, and that this supply is constantly being reinforced by an enormous immigration. The strikers would have done well had they pondered these things beforehand; but they were content to let others who were not laborers, either skilled or unskilled, do the pondering for them, and the result is that the last end of the strike is for them a good deal worse than the first.

Now that this ill-advised attempt to force an advance in wages has failed, the railway companies directly interested can do much towards discouraging such attempts in future by generously conceding the advance that was asked for, to meet the increased cost of living on the part of the workmen. Such a course would conciliate public sentiment, and do much to convince employés that railroad companies are not averse to paying fair wages when fairly earned, no matter how much the earnings of such companies may have been reduced by cut rates and unnecessary and senseless competition with one another.

CAR-COUPLING INVENTIONS.

With the exception of perpetual motion, there is no mechanical problem that has been belabored with such persevering diligence as that which relates to the coupling of railway cars. The resources of inventors, instead of being exhausted by the multitude of devices of the latter class that have already been patented, appear to increase at a rate that borders on the miraculous. The record of patents, however, only represents a portion of the inventive ingenuity at work on the problem. A vast deal of time and thought have been expended upon it outside the sphere of patentable devices, with no result but baffled hopes and a sense of misdirected labor. As a mechanical arrangement, the primitive idea was simply a link and pin connection, as obvious in its uses and as easy to be comprehended as any ordinary chain connection between one vehicle and another, and the handling of which is not necessarily attended with any serious danger. But as the volume of traffic and the number of cars increased with the rapid extension of railroads, the danger became more evident from the increase of casualties; and the efforts of inventors were at once directed to such modifications of the original idea as would meet the requirements of safety without unnecessary complication. It was manifest that any device that met all the essential conditions would forestall all others, and by being patented would monopolize the field and insure a colossal fortune to the inventor. This, with the peculiar fascination which knotty and difficult problems always have for a large class of minds, has led to the production of an immense number of devices, each differing, presumably, from all the others in some particular more or less essential.

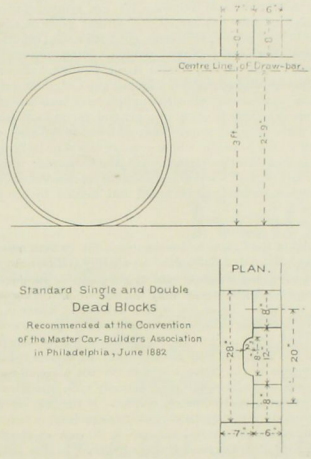
The total number of these devices for which patents have been granted is quite amazing. We fear to risk an estimate lest we should fall below the mark and do injustice to the inventive genius of the age. The surprising thing is that the simple elements of such a simple matter should admit of so many different ways of accomplishing the same end, and at the same time that nothing can be selected from among them all that so meets the universal approval of railroad men as to be accepted as a finality. It is said that there are no duplicates among all the leaves of the forest; or, if there are any, nobody has yet succeeded in finding and bringing them together. Is it so with car-coupling inventions? It really looks like it. Every weekly list of new patents is largely sprinkled with them, adding to the existing variety and with no sign that the end is near. There is, indeed, no probability that the problem will not be wrestled with as vigorously as ever when the great East River bridge shall be completely finished, and the stars and stripes planted in the middle of the polar sea. We expect every day to see the announcement of an encyclopedia or a new journal devoted exclusively to this mechanical specialty. It is quite impossible for the current technical publications to do it justice. No descriptive talent, aided by drawings, can clearly delineate all the complexities and combinations, or intelligibly set forth the comparative differences in these daily multiplying devices, with their yokes, levers, hooks, fulcrums, pawls, cams and slots, tongues, shanks, truncated cones, tumbling-weights, dogs, tripping-rods, and so on through the category of terms. But the most painful duty an editor has to perform in reference to this branch of mechanical development, is answering the letters of confiding correspondents who request his opinion of the merits of their inventions, and offer to send rude home-made models for his inspection and for favorable mention with a view to their introduction on the roads, or sale of the patents. We can only say to inventors of this class that our opinion, formed from an examination of a rough, or even an artistically finished nickel-plated model, is of very little weight in the face of the official declaration of the President of the Car-Builders' Association, that none of the new coupling devices (whose name is legion, and which are presumed to be better, comparatively, than any of the so-called old ones) are a sufficient improvement on the original link-and-pin system to justify their general use.

Discouraging as this may seem both to inventors and to railroad men, we do not think it will lessen in the smallest degree, but rather stimulate, the efforts in this department of inventive activity. One thing, however, needs to be understood by the great army of workers in this field, and that is, that no new coupling device that has originality enough to be patented stands the slightest chance of superseding any of the many excellent ones now in use until its superiority has been shown by the hardest kind of service for a good length of time on the heaviest freight trains, and in severe competition with the best of its rivals.

STANDARD SINGLE AND DOUBLE DEAD-BLOCKS.

The engravings (for which we are indebted to the *Railroad Gazette*) illustrate the standard dimensions recommended by the Master Car-Builders' Association for single and double dead-blocks for freight cars. The double blocks are 8 by 8 inches face by 6 inches thick and 20 inches from center to center. The single block is 8 inches deep by 7 inches thick by 28 inches long, and cut out in the middle as shown. Both single and double blocks are 3 feet above the top of rail, measuring from their under side.

This, it must be admitted, is a very important step in the



right direction, and should the dimensions recommended remain unchanged at the October and the following June meetings of the association, and be adopted by the roads for all new cars and for all cars brought in to be repaired, there would in time be something like practical uniformity in the size and position of dead-blocks, and, as it is believed, a greatly diminished liability to accident in the coupling of cars. The fact, however, remains that there are two standards instead of one; and furthermore, that the two, as recommended, are so nearly alike that a very slight modification of one or both would make them identical so far as the blocks are concerned, and do away with the unnecessary distinction of double and single. That this will be the final result is pretty evident: but it is not likely to be realized until a standard draw-gear is agreed upon; and such standard, in order to deserve the name, must provide draw-bars and springs sufficiently strong to resist the whole force of the concussion when the cars come together, or else the force must be resisted partly by the draw-bars and partly by the dead-blocks.

The distinguishing features of the two systems of double and single blocks as now used, aside from the diversities of each, are fairly shown in the engravings below, one of which (Fig. 1) represents the double blocks used on the Philadelphia & Reading road, and the other (Fig. 2) the

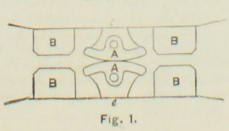


Fig. 1.

single block on the New York Central cars—*A* being the draw-bar heads, *B* the blocks, and *c c* projections on single blocks. The working of these two methods is thus described by the *Gazette:* "From Fig. 1 it will be seen that the draw-bar heads project an inch or two beyond the faces of the dead-blocks. When two cars come together with any considerable force, the draw-bars are pushed inward and the draw-springs are compressed until the dead-blocks on the two cars come in contact with each other, after which they must resist the force of the concussion. The draw-bars may be made to extend beyond the dead-blocks a distance just equal to or a little less than the amount of action of the draw-springs, so the latter need never resist any greater force than one just sufficient to compress them. It will be noticed, too, that when the draw-bars are pushed back,

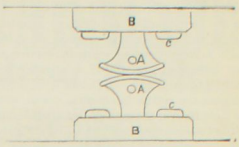


Fig. 2.

so that their heads are flush with the faces of the dead-blocks there is room enough between the latter for the coupling-pin. On the other hand, on the New York Central cars, on which single blocks are used, the draw-bar projects enough beyond the dead-block so that after the former is compressed a distance equal to the full action of the draw-springs, there will still be room enough for the coupling-pins outside of the dead-blocks. It is obvious that with this arrangement the draw-bar and its attachments must resist the whole force of the concussion of the cars when they come together. It is therefore claimed that draw-gear, arranged like that shown in Fig. 2, with a single dead-block, is much more expensive to maintain than that with double dead-blocks, constructed as shown in Fig. 1. On the other hand, it is claimed that, in coupling with the latter arrangement, men are in danger of having their arms crushed between the faces of the blocks, whereas, with the New York Central form of construction, these blocks never come together unless the draw-gear is broken or crushed. It has therefore been urged that the arrangement of the two blocks saves the cars but kills the men, whereas the single blocks save the men but are bad for the cars."

FREIGHT CAR SPRINGS.

So far as bulk, weight and cost are concerned the item of springs is one of comparatively small importance in a railway car, but in the service they render there is no part of the structure more absolutely indispensable. The immense number of springs used and the sharp competition in their manufacture have had the effect of greatly improving their quality, and of superceding some of the old forms and patterns by others better adapted to the demands of the service. Prices, too, have fallen off in consequence of fair and open rivalry and the diminished number of patents in force, so that the aggregate expenditure for this class of supplies is very much less per car than it was ten years ago. There is hardly any limit to the forms into which steel can be wrought for springs, these forms being subordinated to two general types, the helical and elliptic. Rubber is used to a considerable extent, but it is expensive, whether good or poor material is used, the springs made of poor material wearing out rapidly and requiring frequent renewals. Whatever may be the material or form, the important question from the stand-point of economy is: Will not the extra cost of a good A No. 1 spring save a great more in car and track repairs than the difference between its cost and the cost of an inferior spring?

It is impossible, in the long run, for the consumers of a product of steel or other manufacture to get any thing more or better than they pay for. The price that is paid must cover the cost of the product, and this must include, of course, the profit of the producer. If all the springs that are now made were as good and serviceable for the uses designed as springs possibly can be, the limit of economy would be reached. But as all mechanical production is progressive, and the science of metallurgy pre-eminently so, it may be assumed that the limit of excellence in spring manufacture is yet to be attained. Suppose the railroads, from a broader view of economy, should voluntarily offer to pay 25 per cent. more than they are now paying for all kinds of steel springs used in freight cars, provided the springs should be that much better in quality; or, in other words, that the advance in price should go into the springs, and not into the pockets of the manufacturers. Would the result tell favorably for the roads in the annual balance sheet of expenditures and profits? We are inclined to think it would, and that the fact would clearly appear if a correct balance could be struck between the cost of repairs to cars equipped with the two classes of springs respectively, and performing substantially the same service.

Freight car springs are, for obvious reasons, inferior to those used on passenger cars. It is not necessary that the general run of freight should ride quite as easily as first-class passengers do, but as a matter of economy all round, it should be saved from much of the bumping to which it is now subjected. As a rule the springs are too rigid, the recoil under pressure too quick and jerky; they are in many cases too light for the load, and there is too often an insufficient number to a car. The consequence is that their original elasticity is nearly or quite destroyed after a short

period of severe service. It is safe to say that there are thousands of freight cars running on the roads with really no springs under them except in form, and consequently with nothing to absorb the shocks of concussion and prevent them from being communicated directly to the car body. The motive power is thus unnecessarily taxed, and the entire weight on the journals is continually striking a dead, uncushioned blow upon the rails, while the car itself is being worn out at a rate which greatly increases the cost of repairs, and compared with which the difference in the cost of a sufficient number of good springs and a meagre quantity of poor ones, is quite insignificant. A freight spring while in service should always have a decided action. If a spiral spring is not strong enough to carry the maximum load without closing or bringing the spirals in contact, it will wear out in much less time than if there was no such contact. The wear or life of such a spring is not to be measured by the time it remains unbroken, but by the time its proper action is maintained. The expediency of using journal springs for freight is, or at least has been, a mooted question. Railroad men are not agreed as to whether the advantages of such springs compensate for their cost and greater tendency to wear out quickly. It is a fact that they are short-lived, especially if they have much action, and this is pretty good evidence that they do their duty and are where they should be. Every motion made by them is a blow saved to the rails, and to the car body and its contents. On roads where the greatest amount of spring motion is allowed, the cost of keeping the track in repair, even with a heavy passenger traffic and fast trains, is much less than on freight roads with rigid, unelastic springs under the cars. In cases where passenger trucks are used under freight, the swing motion and equalizers, with the greater number of springs and increased vertical motion, make the trains as easy on the road-bed as passenger coaches.

Another consideration that should not be lost sight of in connection with this subject, is the increasing tendency toward heavier cars and loads, as well as increased speed of trains. This is an additional tax upon the springs, as well as upon the skill required for their proper adjustment to the variations of weight. It should be said, however, in justice to the manufacturers, that the use of freight-car springs that are unequal to the service, and consequently a cause of greater expenditure for repairs, is a fault of the users and not of the makers. It is the business of both spring and wheel manufacturers to fill orders, and as in other things the market determines the quality of the product.

THE PINTSCH METHOD OF CAR LIGHTING.

Some three or four years ago we called attention to this method of lighting railway cars, and the extent to which it had been introduced in Europe. The light is produced from a gas made from petroleum refuse mainly, is very brilliant, and much less expensive than ordinary coal gas. It is dry and permanent, deposits no sediment, does not condense in the reservoirs or pipes, and is not explosive. Some improvements, we believe, have been made since our former notice, in the details of the apparatus, but the system remains essentially the same. Each car has attached to it, underneath the floor, a tank or storage reservoir, which is charged with the gas under a strong compression, and from which it is fed to the burners. By means of a regulator consisting of an ingeniously weighted valve, an even pressure is maintained at the burners without being affected by the motion of the car. The gas being peculiar in its nature and differing from coal gas, it is necessary for a railroad, in order to apply the system, to have a regular plant for the manufacture of the gas. The cost of plant, production, repairs, etc., is said to be considerably less than that of the coal gas system. A trial of the light was recently made on a special train of the Erie Railway, consisting of two coaches and a postal car, and according to the newspaper reports, every one on the train was highly delighted at its brightness and steadiness. A newspaper could be read with ease in any part of the two coaches, and the mail car was flooded with light. And furthermore, it is stated that the mail car had been run to St. Louis and back with but one supply of gas, and that the invention is calculated to "work a revolution," and so forth, in car lighting.

The secret of the bad lighting of cars, which is so generally complained of, is the expense of better lighting. The test of a good light is the ability of an ordinary pair of eyes to read ordinary print with ease in any part of the car; and a light sufficient for this can be had from lard, mineral sperm, coal gas or candles, provided there are enough lights and they are properly distributed. If the Pintsch system is what it is represented to be as respects the safety, cheapness and brilliancy of the light, then there is no reason why it should not at once take the place of all inferior methods of lighting. What railway passengers want is better lighted cars than we now have for suburban and all other trains, and not merely for a few exceptional cars on through trains, as is now the case. We want some sort of a system that will "work a revolution." If the Pintsch system will do it, let the revolution begin now, and not wait an indefinite time for the unknown possibilities of what may be developed by electrical science in the future.

THE PASSENGER TRAIN BRAKEMAN.

A good many harmless but none the less undeserved squibs are fired by the newspaper press at the passenger train brakeman. He is a standing target for the funny paragraphist of the period. When other game is scarce the humorous itemizer is always sure of his quarry by stepping on the first way train. The more stations there are to be called out the better it is for the funny man, and the worse for the victim who has to do the calling. He is unconsciously under fire, and does not know that all his peculiarities, physical, vocal and rhetorical, are being photographed to a nicety, and tinted and colored in the working-up process to suit the taste of the artist. The average brakeman is defective in elocutionary training, and does not understand the oratorical charm of a musical voice and a distinct clean-cut articulation in announcing such names as "Shickshinny," "Patagumpus," "Squaw Ranch," "Smelfungus," "Rat River," "Shookmanchunk" and other like specimens of railway station nomenclature. The defect is in his education, and is more a misfortune than a fault. Let the funny itemizer try his vocal capacity at repeating day in and day out with monotonous iteration the same set of names, and he will in a short time have what newsboys and street hucksters have, a partial paralysis of the tongue that would make his syllables run together automatically in spite of himself. This, we imagine, is the cause of much of the incoherency complained of in the announcement of stations by brakemen on passenger trains. It can not be denied, however, that many brakemen are inexcusably careless in this matter from pure indifference and laziness. We are reminded of one of this kind who has served for several years on a local train in New Jersey, who sings out with a wearied drawl, "Staash-Mark-stete, Nuke," which, being interpreted, means, "Next station, Market street, Newark." In order to relieve brakemen of this irksome part of their duties, station "indicators" of various kinds have been invented, but are not likely to come into general use on local trains that make frequent stops. They address the eye only, and are of no use to people whose eyes are closed or looking in some other direction than toward the indicator; while a clear and distinct vocal announcement reaches the ear, and is much more likely to be heard and heeded by the passengers.

SOME of the figures and estimates in the current issue of "Poor's Manual of Railroads" are sharply criticised by the press, especially the statement of the probable number of persons employed in operating the roads. Mr. Poor puts it at 1,200,000. These are round numbers. There is no way of reducing them to exactness and accuracy, nor is there any great need of it. Suppose we reduce the estimate one half, it is still guess-work. In respect to other aggregates in the Manual which are not given in round numbers, a suspicion will very naturally arise as to whether they are even approximately correct. If they are so—and we are quite willing to accept them as such—it is as much as any reasonable mortal can expect in view of the difficulties the compiler has to contend with. In the matter of statistics, the railway system of the country has grown to such unwieldy dimensions as to be unmanageable without the intervention of governmental authority. In the absence of this, a manual maker can only do the best he can with the materials at his command. It is easy to criticise and raise doubts when there are no means of arriving at certainty. Who knows just how many railroad employees are killed and injured every year in handling freight cars? There are no complete data for obtaining such knowledge, but we can guess and conjecture from limited and imperfect data, and make it out pretty clearly that there are a good many thousands more or less. The exact number is not material; nor is it material in the matter of mileage, population, cost of service or anything else of that nature. All that can be had is a reasonable and fair approximation derived from the best attainable information, and these, we think, Mr. Poor has given us. If any body thinks they can improve on what he has done let them set about it at once.

THE committee appointed at the June meeting of the Master Car-Builders' Association on reorganization, and to report to the adjourned meeting to be held at Niagara Falls, in October any further amendments to the constitution of the association that may be considered necessary, have issued a circular giving notice of the previous action of the association, and inviting railway companies to send representative members to the October meeting, and to furnish the committee, in the meantime, with any suggestions touching the revision of the constitution that may be deemed advisable. Replies to the circular should be addressed to M. N. Forney, Secretary of the Committee, 73 Broadway, New York.

Baldwin's Official Railway Guide, published monthly by Henry Nauert & Co., Buffalo, N. Y., is an excellent pocket companion for travelers in New York, Pennsylvania and Ontario. It is compact, portable and well printed, and contains a well-digested summary of current railway news and some choice siftings of fun. Price $1 a year.

THE Catskill Mountain Railroad has been completed, and will make that attractive mountain resort more accessible than it has been hitherto.

THE weather on the Southern Pacific Railroad through Arizona is moderately warm this season. In a sleeper over that route the other day, not a man, woman or child wore anything during the day but their night clothes. If the warmth of the climate continues, it will get so during August that the passengers over that line will cut their costume down to a coupon ticket and a plain gold ring.

WE see a large number of Italians are being utilized in building Texas railroads. The average Italian is so lazy he might be useful as a sleeper; but we should think he would wake up and object to being used as a sleeper when the workmen laid iron rails on him and drove long spikes in him to keep the rails in place; but some people will submit to almost anything rather than work.—*Texas Siftings.*

A RAILROAD contractor at Utica has a gang at work composed of Americans, Danes, Greeks, Italians, Hungarians, Germans, Spaniards, Irish and French, and is obliged to engage a professor of languages from a neighboring college to swear at them.

THERE is a man in Newark, N. J., so close that when he attends church he occupies the pew farthest from the pulpit to save the interest on his money while the collectors are passing the plate for contributions.

THE editor of the Pittsburg *Magnet* asks, "Do hogs pay?" Not much. A great many take the paper for a long time and then have the postmaster return it marked "refused."

"THEY tell me Brown has a great ear for music," said Fenderson. "Yes," replied Fogg; "I knew he had a great ear, two of them, in fact; but I did not know that they were for music. I supposed they were for brushing flies off the top of his head."

A BURGLAR got into the house of a country editor the other night. After a terrible struggle the editor succeeded in robbing him.

A WESTERN paper announces that upon the occasion of a recent boiler explosion in the neighborhood "between three and four men were killed."

Our Directory.

We note the following changes since our last issue. Readers are requested to give us prompt notice of changes when they occur:

Atchison, Topeka & Santa Fe.—Geo. L. Sands has been appointed Superintendent of the Las Vegas and Rio Grande Division, with headquarters at Las Vegas, N. M. This supersedes T. J. Seely, formerly Superintendent of the Las Vegas Division, and F. Leach, Jr., formerly Superintendent of the Rio Grande Division.

Boston, Revere Beach & Lynn.—The position of Superintendent of this road has been abolished and in its place two offices have been established. Charles A. Hammond is Master of Construction and Maintenance, and also Puchasing Agent, and L. C. Legro Master of Transportation.

Canada Southern.—Robert Potts has been appointed General Master Car-Builder, in place of John Ortton, resigned.

Chatteroi.—J. R. Martin has been appointed Master Mechanic in place of W. C. Pendleton, who has been appointed Freight Agent.

Chicago, Burlington & Quincy.—J. B. Maxon has been appointed Superintendent of the Middle Iowa Division, with office at Ottumwa, Ia. He was recently Road-Master of the Chicago Division.

Connotton Valley.—W. N. Moffett has resigned the position of Superintendent, and E. W. Poorman has resigned as Master Mechanic.

Denver & Rio Grande.—Frank G. Howard has resigned the position of Master Car-Builder to accept a similar position on the Northern Pacific.

Florida Central & Western.—John P. Laird, General Superintendent, died at Tallahassee, July 29.

Great Western of Canada.—Frederick Broughton retires from the position of General Manager, the road having been consolidated with the Grand Trunk.

Mexican National.—A. R. Roberts having severed his connection with the Mexican National Railway, the Texas-Mexican Railway and the Mexican National Construction Company as Purchasing Agent, the duties of that position will until further notice be performed by John Dougherty (Comptroller), as Acting Purchasing Agent.

New York, Chicago & St. Louis.—Ross Kells, who has been for a long time Master Mechanic on the Pittsburg, Cincinnati & St. Louis, has been appointed Superintendent of Motive Power and Machinery, with office at Cleveland, O.

New York, Lake Erie & Western.—Charles Neilson, late of the Delaware Division, has been appointed Superintendent of the Buffalo and Rochester Divisions, in place of Charles W. Gardiner, resigned. Wm. J. Murphy succeeds Mr. Neilson as Superintendent of the Delaware Division.

Ohio Southern.—David R. Ennis, late Assistant Superintendent, has been appointed Superintendent, with office in Springfield, O.

Peachbottom.—Samuel Dickey, previously Superintendent and Treasurer, has been appointed General Manager and Treasurer, and G. Renie Dickey, Auditor and Purchasing Agent, has been promoted to the superintendency.

Pittsburgh, Cincinnati & St. Louis.—Charles Watts has been appointed Superintendent of Western Division of Columbus, Chicago & Indiana Central, in place of C. C. F Bent, resigned. C. B. Street is appointed Master Mechanic in place of Ross Kells.

Richmond & Danville.—W. A. Walden has been appointed Acting Master Mechanic of the Atlanta & Charlotte Air-Line Division in place of C. D. Wall, resigned.

San Francisco & Northern Pacific.—John Martin has resigned the position of Master Car-Builder of this road.

St. Paul, Minneapolis & Manitoba.—S. R. Stimson is appointed General Superintendent of the lines of this company, with office at St. Paul, Minn.

Western & Atlantic.—Master Car-Builder Wm. A. Gramling having resigned, John H. Flynn, Master Mechanic, will hereafter have charge of the Car Department in addition to his former duties.

CAR-BUILDER SUPPLEMENT AND EXPORT EDITION,

NOW READY.

With complete lists of Car-Builders, Wheel, Axle, Spring and Locomotive Builders of the United States and Canada, together with all the Street Railways of America and Canada; their officers' names, number of cars, horses and gauge, and all the West Indian, Central and South American Railroads; their officers' names, number of cars, locomotives and length of roads. Advertising rates given on application. MORSE BUILDING, 140 NASSAU STREET, NEW YORK.

DIRECTORY

of the Railroads of the United States and Canada, showing the gauge, length of road, number of locomotives and number of cars; and giving the names and titles of their principal officers in charge of the operating, purchasing and rolling stock departments.

A

Adirondack R. R. 4-8½ gauge 62 m. 3 lo. 62 cars.
C. E. Durkee, *Supt* ....Saratoga, N. Y.
Jacob Myers, *M. M.* ....Saratoga, N. Y.
Jas. J. Travers, *M. C. B.* ....Saratoga, N. Y.
Alabama Great So'n R. R. (*See Cin., N. O. & T. P.*)
Albany & Susquehanna R. R. (*See D. & H. Canal Co.*)
Albert Ry. 4-8½ g. 51 m. 3 lo. 32 cars.
G. A. Robinson, *Manager* ....Hillsboro, N. B.
Jas. McKay, *M. M. & C. B.* ....Hillsboro, N. B.
Allegany Central R. R. 3 gauge 30 miles.
Geo. D. Chapman, *Gen. Man.* ..Angelica, N. Y.
W. O. Chapman, *Gen. Supt* ...Friendship, N. Y.
Allegheny Valley R. R. 4-9 g. 259 m. 75 lo. 1968 c.
David McCargo, *Gen. Supt. & Pur. Agt.*; and
C. B. Price, *Supt.* (Riv. Div.) ....Pittsburg, Pa.
A. A. Jackson, *Supt.* (L. G. Div.) .Brookville, Pa.
Geo. W. Glass, *M. M.* ....Verona, Pa.
R. Gunning, *M. C. B.* ....Verona, Pa.
Alliance & Lake Erie R. R. 3 g. 30 m. 3 lo. 112 cars.
W. E. Lewis, *Gen. Man* ....Alliance, O.
C. C. Dorman, *M. M. & M. C. B.* ....Alliance, O.
Annapolis & Elk Ridge R. R. 4-8½ g. 20 m. 4 lo. 29 c.
W. H. Bians, *Supt. & Pur. Agt* ..Annapolis, Md.
John L. Beall, *M. Mach* ....Annapolis, Md.
Arkansas Midland R. R. 3-6 g. 48 m. 4 lo. 45 cars.
A. H. Johnson, *Pr. & Gen. Man* ...Helena, Ark.
J. B. Johnson, *M. M. & M. C. B.* ..Helena, Ark.
Ashland Coal & Iron Ry. 4-8½ g. 14 m. 7 lo. 425 c.
Douglas Putnam, Jr., *Gen. Supt* ..Ashland, Ky.
Robt. Peebles, *Pur. Agt* ....Ashland, Ky.
E. M. Roberts, *M. M.* ....Ashland, Ky.
Ashtabula & Pittsburgh Ry. (*See Penna. Co.*)
Asheville & Spartanburg R. R. 5 g. 49 m. 2 lo. 12 c.
Jas. Anderson, *Supt. & Pur. Agt.* .Spart'b'g, S. C.
Wm. Platt, *M. M.* ....Spartanburg, S. C.
W. B. Brown, *M. C. B.* ....Spartanburg, S. C.
Atchison, Topeka & Santa Fé R. R.
4-8½ g. 1,846 m. 203 lo. 8,108 cars.
C. C. Wheeler, *Gen. Man* ....Topeka, Kan.
D. J. Chase, *Gen Supt* ....Topeka, Kan.
W. S. Mellen, *Asst. Gen. Supt* ....Topeka, Kan.
F. M. Smith, *Pur. Agt* ....Topeka, Kan.
Geo. Hackney, *Supt. Lo. & Car. Dept* do.
Clem. Hackney, *M. M.* ....Topeka, Kan.
Eastern Div.: C. M. Rathbun, *Supt* ..Topeka, Kan
Henry Hull, *G. F. Car Dept* ....Topeka, Kan.
John Fagan, *M. M.* ....Atchison, Kan.
J. M. Smith, *M. M.* ....Kansas City, Mo.
W. W. Wheeler, *M. M.* ....Emporia, Kan.
Mid. Div.: H. R. Nickerson, *Supt.* Nickerson, Kan.
W. Y. Johnson, *M. M.* ....Nickerson, Kan.
J. Q. Adams, *M. M.* ....Dodge, Kan.
Col. Div.: W. W. Borst, *Supt* ....La Junta, Col.
A. C. Stiles, *M. M.* ....La Junta, Col.
H. W. Somers, *M. M.* ....Raton, N. M.
Las Vegas D.: Geo. L. Sands, *Supt.* Las Vegas, N. M.
L. H. Waugh, *M. M.* ....Las Vegas, N. M.
Rio G. Div.: Geo. L. Sands, *Supt.* Las Vegas, N. M.
M. C. Wheeler, *M. M.* ....Wallace, N. M.
T. Clyde, *M. M.* ....San Marcial, N. M.
H. P. Olcott, *M. M.* ....Deming, N. M.
Atlanta & West Point R. R. (*See Western of Ala.*)
Atlantic & Pacific R. R. 4-8½ g. 286 m.
F. W. Smith *Gen. Supt* ....Albuquerque, N. M.
B. W. Angell, *Div. Supt* ....Albuquerque, N. M.
Geo. Chalender, *Supt. M. P. & M.* do.
D. B. Sibley, *Pur. Agt* ....Chicago, Ill.
Augusta & Knoxville R. R. 30 miles.
Gen. Supt & M. M. ..Augusta Ga.

B

Baltimore & Ohio R. R.
4-8½ g. 1,539 m. 546 lo. 14,862 cars.
N. S. Hill, *Pur. Agt* ....Baltimore, Md.
E. Ohio Riv. Div. 4-8½ g. 972 m.
W. M. Clements, *Mast. Trans* ...Baltimore, Md.
N. E. Chapman, *Mast. of Mach* ..Baltimore, Md.
A. J. Cromwell, *Asst. M. of M.* .Baltimore, Md.
L. Packard, *M. C. B.* ....Baltimore, Md.
I. N. Kalbaugh, *M. M.* ....Baltimore, Md.
Wm. Edwards, *M. M.* ..Martinsburgh, W. Va.
Sam. Houston, *M. M.* ....Piedmont, W. Va.
Robert Maxwell, *M. M.* ....Cumberland, Md.
S. B. Crawford, *M. M.* ....Grafton, W. Va.
Alex. Laird, *M. M.* ....Parkersburg, W. Va.
Chas. Hirsch, *M. M.* ....Wheeling, W. Va.
Pitts. Div.: T. M. King, *Gen. Supt* ...Pittsburg, Pa
J. E. Sampsell, *M. of Mach* ..Connelsville, Pa.
Trans-Ohio Divs.: B. Dunham, *G. Man* .Newark, O.
W. H. Harrison, *Mast. of Mach* ....Newark, O.
E. L. Weisgerber, *M. M.* ....Newark, O.
H. M. Ingler, *M. M.* ....Bellaire, O.
O. B. Perkins, *M. M.* ....Zanesville, O.
Andrew Beckert, *M. M.* ....Sandusky, O.
F. J. Gunther, *M. M.* ....Chicago Junction, O.
Chi. Div.: John Thomas, *Supt* ....Chicago, Ill.
Benj. Lowther, *M. M.* ....Garrett, Ind.
W. H. Wilkinson, *M. M.* ....Kingston, Ill.
Baltimore & Potomac R. R. (*See Penna. R. R.*)
Bangor & Piscataquis R. R. 4-8½ g. 63 m. 4 lo. 87 cars.
Arthur Brown, *Supt* ....Bangor, Me.
C. S. Nason, *M. M.* ....Bangor, Me.
J. W. Comins, *M. C. B.* ....Oldtown, Me.
Barclay R. R. 4-8½ g. 16 miles.
F. F. Lyon, *Supt* ....Barclay, Pa.
J. A. Hardenburg, *Pur. Agt* ..21 Cort. st., N. Y.
Wm. Johnson, *M. M.* ....Towanda, Pa.
Bedford, Springville, Owensburg & Bloomfield Ry.
3 g. 41 m. 5 lo. 65 cars.
Jas. W. Kennedy, *Gen. Supt. & Pur. Agt.*; and
Capt. Geo. Elliott, *M. M.* ....Bedford, Ind.
Richard G. Elliott, *M. C. B.* ....Bedford, Ind.
Bellaire & South-Western Ry. Co. 3 g. 42 m. 3 lo. 29 c.
S. J. Cochren, *Gen. Man* ....Bellaire, O.
Bell's Gap R. R. 3 g. 23 m. 2 lo. 35 cars.
R. G. Ford, *Supt* ....Bellwood (P. O.), Pa.
A. Zimmerman, *M. C. B.* ....Bellwood, Pa.
Bennington & Rutland Ry. 4-8½ g. 9 m. 10 lo. 214 c.
F. C. White, *Supt. & Pur. Agt* ..Bennington, Vt.
G. W. Blanchard, *M. M.* ....Rutland, Vt.
Bingham, Canyon & Camp Floyd, and
Wasatch & Jordan Valley R. R.'s.
3 g. 44 m. 7 lo. 300 cars.
J. G. Kennedy, *Gen. Man* ..Salt Lake City, Utah
Geo. M. Young, *Supt* .... do. do.
Bodie Lumber Co. 3 g. 34 miles.
Thomas Holt, *Supt. & Pur. Agt* ....Bodie, Cal
E. M. Luckett, *M. M. & C. B.* ....Bodie, Cal.
Boston, Barre & Gardner. 4-8½ g. 36 m. 7 lo. 107 c.
H. M. Witter, *Supt. & Pur. Agt.* Worcester, Mass.
Chas. F. Brigham, *M. M.* ....Worcester, Mass.
Boston, Concord, Montreal & White Mts. R. R.
4-8½ g. 167 m. 34 lo. 677 cars
James A. Dodge, *Gen. Man* ....Plymouth, N. H.
J. Thos. Vose, *Pur. Agt* ....Boston, Mass.
R. Adams, *M. M.* ....Lake Village, N. H.
G. A. Ferguson, *Asst. M. M.* ...Lake Village, N. H.
L. D. Pickering, *M. C. B.* ....Lake Village, N. H.
Boston, Hoosac Tunnel & W'n Ry.
4-8½ g. 53 m. 17 lo. 1,112 cars.
W. V. Reynolds, *Gen. Man* ..Mech'ville, N. Y.
J. L. Wellington, *Gen. Supt.* Mechanicville, N. Y.
J. L. Wellington, *P. A.* ....Mechanicville, N. Y.
W. H. Powell, Jr., *M. M.* ....Mechanicville, N. Y.
John S. Ellis, *M. C. B.* ....Mechanicville, N. Y.
Boston, Lowell & Concord R. Rs.
4-8½ g. 360 m. 110 lo. 2,211 cars.
H. C. Sherburne, *Gen. Man* ....Boston, Mass.
F. H. Nourse, *Pur. Agt* ....Boston, Mass.
Jas. T. Gordon, *M. M.* ....Concord, N. H.
J. N. Lander, *Supt. Roll. Stock* .Concord N. H.,
Boston & Lowell Div.:
J. F. Crockett, *M. Trans.* ....Boston.
Concord Divs.:
H. E. Chamberlain, *Supt* ....Concord, N. H.
J. T. Gordon, *M. M. & C. B.* ....Concord, N. H.
Boston, Revere Beach & Lynn R. R. 3 g. 9 m. 5 lo. 46 c.
L. C. Legro, *M. of Trans* ....Boston, Mass.
C. A. Hammond, *Pur. Agt* ....Boston, Mass.
J. L. Folsom, *M. M.* ....Boston, Mass.
John Coghlan, *M. C. B.* ....Boston, Mass.
Boston & Albany R. R. 4-8½ g. 372 m. 248 lo. 6,012 c.
C. O. Russell, *Gen. Supt* ....Springfield, Mass.
W. H. Barnes, *Asst. Supt* ....Boston, Mass.
A. B. Underhill, *Supt. M. P.* ...Springfield, Mass.
F. D. Adams, *M. C. B.* ....Allston, Mass.
W. H. Russell, *Div. Supt* ....Albany, N. Y.
H. W. Eddy, *Div. M. M.* ....Springfield, Mass.
J. B. Weston, *For. C. Sh.* ...Springfield, Mass.
G. H. Colby, *Div. M. M.* ....Boston, Mass.
T. B. Purvis, *Div. M. M.* ....Greenbush, N. Y.
J. E. Doran, *For. C. Sh.* ....Greenbush, N. Y.
Boston & Maine R. R. 4-8½ g. 206 m. 84 lo. 2,100 c.
J. T. Furber, *Gen. Supt. & P. A.* ..Boston, Mass.
Wm. Smith, *M. M.* ....Boston, Mass.
D. C. Richardson, *M. C. B.* ....Lawrence, Mass.
Boston & N. Y. Air Line. 4-8½ g. 53 m. 9 lo. 156 c.
Jos. H. Franklin, *Supt* ....New Haven, Conn.
Boston & Providence R. R. 4-8½ g. 67 m. 47 lo. 866 c.
A. A. Folsom, *Gen. Supt* ....Boston, Mass.
Geo. Richards, *M. M.* ....Roxbury, Mass.
Jno. Lightner, *M. C. B.* ....Roxbury, Mass.
Bradford, Bordell & Kinzua R. R. 3 g. 30 m. 6 lo. 80 c.
B. C. Williams, *Supt. & Pur. Agt* ..Bradford, Pa.
John Delaney, *M. M. & C. B.* ...Bradford, Pa.
Bradford, Eldred & Cuba R. R.
C. D. Williams, *Supt. & P. A.* ..Wellesville, N. Y.
Breakwater & Frankford R. R. (*See Junc. & Break.*)
Brighthope Ry. 3 g. 37 m. 3 lo. 193 cars.
Jas. R. Worth, *Supt* ....Richmond, Va.
A. Gary, *Supt. Way & Works.* Winterpock, Va.
Alex. Calder, *M. M.* ....Chester, Va.
Brunswick & Albany R. R. 5 g. 172 m. 13 lo. 170 c.
R. D. Meader, *Supt* ....Brunswick, Ga.
Buffalo, N. Y. & Phila. Ry. 4-8½ g. 121 m. 34 lo. 2,436 c.
Geo. S. Gatchell, *Gen. Supt* ....Buffalo, N. Y.
J. H. Poole, *Pur. Agt* ....Buffalo, N. Y.
Allen Vail, *Supt. M. P. & M.* ....Buffalo, N. Y.
Henry Wagner, *M. M.* ....Buffalo, N. Y.
Buff. Div.: J. T. Gardiner, *Supt* ....Buffalo, N. Y.
N. G. Div.: J. W. Watson, *Supt* ....Olean, N. Y.
Buff., Pittsburg & W'n R. R. 4-9 g. 156 m. 33 l. 506 c.
Oliver Watson, Jr., *Gen. Supt* ....Buffalo, N. Y.
E. H. Witter, *Pur. Agt* ....Oil City, Pa.
H. J. Bookhammer, *M. M.* ....Oil City, Pa.
John Monks, *M. C. B.* ....Oil City, Pa.
Burlington, Cedar Rapids & Northern Ry.
4-8½ g. 644 m. 62 lo. 2,120 cars.
C. J. Ives, *Gen. Supt* ....Cedar Rapids, Ia.
Robt. Williams, *Supt* ....Cedar Rapids, Ia.
T. Stickney, *Pur. Agt* ....Cedar Rapids, Ia.
R. W. Bushnell, *M. M. & C. B.* Cedar Rapids, Ia.
Burlington & Lamoille R. R. 4-8½ g. 36 m. 3 lo. 61 c.
G. L. Linsley, *Gen. Man. & Supt.* Burlington, Vt.
F. G. Brownell, *M. M. & P. A.* ...Burlington, Vt.
Burlington & Mo. Riv. R. R. (in Neb.) (*See C., B. & Q.*)
Burlington & North-West'n Ry. 3 g. 38 m. 3 lo. 85 c.
John T. Gerry, *Supt* ....Burlington, Ia.
Burlington & Ohio River R. R.
G. P. Merrill, *Gen. Man. & Pur. Agt.* Chicago, Ill.
J. K. Lape, *Supt. of Equip* ....Chicago, Ill.

C

Camden & Atlantic R. R. 4-8½ g. 79 m. 16 lo. 264 c.
F. A. Lister, *Supt & Pur. Agt* ....Camden, N. J.
Rufus Hill, *M. M.* ....Camden, N. J.
Samuel Wills, *M. C. B.* ....Camden, N. J.
Canada Southern Ry. 4-8½ g. 403 m. 89 l. 3,367 c.
W. P. Taylor, *Gen. Man* ....Buffalo, N. Y.
A. F. Howland, *Pur. Agt* ....St. Thomas, Ont.
W. A. Short, *Gen. M. M.* ....St. Thomas, Ont.
Rob't Potts, *Gen. M. C. B.* ....St. Thomas, Ont.
Can. Div.: W. E. Carroll, *Supt* ..St. Thomas, Ont.
Robert Potts, *M. C. B.* ....St. Thomas, Ont.
U. S. Div.: E. P. Murray, *Supt* ....Toledo, O.
O. P. Dunbar, *M. M.* ....Grosse Isle, Mich.
Canadian Pacific R. R. 4-8½ g. 551 m. 26 lo. 473 c.
W. C. Van Horne, *Gen. Man.* Winnipeg, Man.
Eastern Div. 240 m. 16 lo. 276 cars.
Archer Baker, *Gen. Supt* ....Montreal, Can.
Tho. Irwin, *Mech. Supt* ....Brockville, Ont.
Western Div. 311 m. 10 lo. 207 cars.
A. B. Stickney, *Gen. Supt* ....Winnipeg, Man.
Geo. P. Nelson, *Pur. Agt* ....Winnipeg, Man.
F. C. Butterfield, *M. M. & M. C. B.* Winnipeg, Man.
Cape F'r & Yadkin Val. R. R. 4-8½ g. 47 m. 3 lo. 31 c.
L. C. Jones, *Gen. Supt* ....Fayetteville, N. C.
Isaac W. Clark, *M. M. & C. B.* .Fayetteville, N. C.
Caroline Central R. R. (*See Ral. & Aug.*)
Carson & Colorado R. R. (*See Va. & Truckee.*)
Catasauqua & Fogelsville. 4-8½ g. 25 m. 6 lo. 577 c.
C. W. Chapman, *Supt. & P. A.* Catasauqua, Pa.
Thos. E. Evans, *M. M.* ....Catasauqua, Pa.
Chas. J. Holbach, *M. C. B.* ....Catasauqua, Pa.
Central and South-Western Railroads (Ga.).
5 g. 975 m. 127 lo. 1,858 cars.
W. G. Raoul, *V. P. and G. Man.* Savannah, Ga.
Wm. Rogers, *Gen. Supt* ....Savannah, Ga.
Henry Yonge, *Pur. Agt* ....Savannah, Ga.
Cen. Div.: D. D. Arden, *M. M.* ....Savannah, Ga.
John McCann, *M. M.* ....Augusta, Ga.
R. M. Barthlemess, *M. C. B.* ....Savannah, Ga.
So.-West'n Div.: W. F. Shellman, *Supt.* Macon, Ga.
D. M. Gugel, *M. M.* ....Macon, Ga.
James A. Knight, *M. C. B.* ....Macon, Ga.
Central R. R. of N. J. 4-8½ g. 544 m. 294 lo. 27,198 c.
Gen. Man ....New York, N. Y.
B. W. Burnett, *Pur. Agt* ....New York, N. Y.
W. W. Stearns, *Gen. Supt* ....Elizabeth, N. J.
Cen Div.: Wm. Woodcock, *M. M.* ..Elizabeth, N. J.
Geo. Hackett, *M. C. B.* ....Elizabeth, N. J.
C. G. Williams, *M. M.* ....Jersey City, N. J.
John Alpaugh, *M. M.* ....Phillipsburg, N. J.
Long Br. Div.: J. F. Randolph, *Supt.* Elizabeth, N. J.
N. J. So. Div.: R. Blodgett, *Supt* ...Manchester, N. J.
Wm. Montgomery, *M. M.* ....Manchester, N. J.
Chas. N. Sawyer, *M. C. B.* ....Manchester, N. J.
Lehigh & Susquehanna Div.:
W. S. Polhemus, *A. G. Supt.* Mauch Chunk, Pa.
L. C. Brastow, *M. M. & C. B.* ....Ashley, Pa.
Central R. R. of S. C. (*See Wil. & Wel.*)
Central Iowa Ry. 4-8½ g. 244 m. 37 lo. 1,487 cars.
D. N. Pickering, *Gen. Supt* ...Marshalltown, Ia.
John Player, *M. M.* ....Marshalltown, Ia.
T. L. Seevers, *M. C. B.* ....Marshalltown, Ia.
Central Pac. R. R. 4-8½ g. 2,777 m. 296 lo. 7,277 c.
A. N. Towne, *Gen. Man* ....San Francisco, Cal.
J. A. Fillmore, *Gen. Supt* ...San Francisco, Cal.
R. H. Pratt, *A. G. Supt* ....San Francisco, Cal.
J. R. Watson, *Gen. Pur. Agt* ..Sacramento, Cal.
A. J. Stevens, *Gen. M. M.* ....Sacramento, Cal.
Benj. Welch, *Gen. M. C. B.* ....Sacramento, Cal.
G. J. Turner, *M. C. B.* ....Sacramento, Cal.
West'n; Visalia Tulare Divs. and North'n R. R.:
A. D. Wilder, *Supt* ....W. Oakland, Cal.
G. D. Welch, *M. M.* (W. Div.) W. Oakland, Cal.
W. D. Ludlow, *M. C. B.* (W. Div.) do.
S. J. Johnson, *M. M.* (T. Div.) ....Tulare, Cal.
D. Rutherford, *M. M.* (N. Rd.) .S. Vallejo, Cal.
Sacramento; Oregon Divs.; and Cal. Pac. R. R.
J. B. Wright, *Supt* ....Sacramento, Cal.
M. W. Cooley, *M. M.* ....Sacramento, Cal.
Phil. Douglas, *For. Car Sh.* ..Sacramento, Cal.
Truckee Div.: Frank Free, *Supt.* Wadsworth, Nev.
Geo. Gregg, *M. M.* ....Wadsworth, Nev.
Wm. McPherson, *F. Car Sh.* ..Wadsworth, Nev.
Humb't Div.: G. W. Coddington, *Supt.* Carlin, Nev.
W. F. Smith, *M. M.* ....Carlin, Nev.
J. C. Doughty, *For. Car Sh.* ....Carlin, Nev.
Salt Lake Div.: A. G. Fell, *Supt* ....Ogden, Utah.
James Lamb, *M. M.* ....Terrace, Utah.
A. Sherburne, *For. Car Sh* ....Ogden, Utah.
Los Angeles; and Yuma Divs. (So. Pac.):
E. E. Hewitt, *Asst. Supt* ....Los Angeles, Cal.
James Velsir, *M. M.* ....Los Angeles, Cal.
J. S. Young, *For. Car Sh.* ...Los Angeles, Cal.
Arizona Div. (So. Pac.):
A. A. Bean, *Asst. Supt* ....Tucson, Ariz.
Rio Grande and El Paso Divs. (So. Pac.):
J. Campbell, *Ass't Supt* ....El Paso, Texas.
H. C. Standish, *For. Sh.* ....El Paso, Texas.
Central Vermont R. R. 4-8½ g. 548 m. 132 lo. 2,522 c.
J. W. Hobart, *Gen. Supt* ....St. Albans, Vt.
J. M. Foss, *Asst. Gen. Supt. & M. M.* St. Albans, Vt
No. Div.: I. B. Futvoye, *Supt* ....St. Johns, P. Q.
Rut. Div.: J. Burdett, *Supt* ....Rutland, Vt.
N. L. Davis, *M. M. & C. B.* ....Rutland, Vt.
New London & No'n R. R. 143 m. 22 lo. 303 c.
G. W. Bentley, *G. Supt. & P. A.* ..New London, Ct.
I. W. Dow, *M. M.* ....New London, Ct.
S. O. Banks, *M. C. B.* ....New London, Ct.
Charleston & Savannah Ry. 5 g. 115 m. 17 lo. 98 c.
H. S. Haines, *Gen. Man* ....Savannah, Ga.
C. S. Gadsden, *Gen. Supt* ....Charleston, S. C.
H. A. Ulmo, *M. M.* ....Savannah, Ga.
J. D. Murphy, *M. C. B.* ....Savannah, Ga.
Charlotte, Columbia & Augusta R. R. (*See Rich. & D.*)
Chateaugay R. R. 3 g. 34 m. 6 lo. 125 cars.
A. L. Inman, *Gen. Man* ....Plattsburg, N. Y.
J. M. Davis, *Supt. & M. M.* ....Plattsburg, N. Y.
Chattaroi Ry. 4-8½ g. 43 miles 11 loco. 483 cars
C. H. Rockwell, *Gen. Man. & P. A.* Ashland, Ky.
J. R. Martin, *M. M.* ....Ashland, Ky.
Joseph Burley, *M. C. B.* ....Ashland, Ky.
Cheraw & Chester R. R. 3 g. 30 m. 3 lo. 38 cars.
W. H. Harding, *Pres. & Supt* ....Chester, S. C.
A. M. Manning, *M. M.* ....Chester, S. C.
Cheraw & Darlington R. R. (*See Wil. & Wel.*)
Cheraw & Salisbury R. R. (*See Wil. & Wel.*)
Cherokee R. R. 3 g. 37 m. 5 lo. 50 cars.
John Postel, *Manager* ....Atlanta, Ga.
C. E. Scruten, *M. M. & C. B.* ....Cedartown, Ga.
Chesapeake, Ohio & So.-W'n. 5 g. 365 m. 8 lo. 102 c.
R. Meek, *G. S. & Pur. Agt.* Elizabethtown, Ky.
W. D. Robb, *M. M.* .... do.
C. A. Simon, *M. M. & C. B.* ....Paducah, Ky.
Chesapeake & Ohio Ry. 4-8½ g. 642 m. 133 l. 3,543 c.
C. W. Smith, *Gen. Man* ....Richmond, Va.
A. H. Wood, *Asst. to Gen. Man* .... do.
A. S. Emmons, *Pur. Agt* ....Richmond, Va.
John McFarland, *Supt. M. P.* ....Richmond, Va.
Eastern Div.: E. T. Smith, *Supt* ..Richmond, Va.
J. N. King, *M. C. B.* ....Richmond, Va.
Hunt. Div.: W. P. Harris, *Supt.*; and
T. L. Chapman, *Asst. Supt. M. P.*; and
H. C. Bassinger, *M. C. B.* Huntington, W. Va.
Lex. Div.: J. D. Yarrington, *Supt.* Lexington, Ky.
Cheshire R. R. 4-8½ g. 80 m. 30 lo. 499 cars.
R. Stewart, *Gen. Man* ....Keene, N. H.
H. H. Stone, *Pur. Agt* ....Keene, N. H.
F. A. Perry, *M. M.* ....Keene, N. H.
A. E. Howard, *G. For. Car Sh.* ..Keene, N. H.
Chester & Lenoir Ry. 3 g. 50 m. 3 lo. 23 cars.
James Mason, *Supt* ....Yorkville, S. C.
T. P. Beard, *M. M.* ....Yorkville, S. C.
Chicago, B. & Kan. City Ry. 4-8½ g. 181 m. 9 lo. 130 c.
J. W. Smith, *Gen. Supt* ....Keokuk, Ia.
W. H. Bartlett, *Act. M. M.* ....Burlington, Ia.
A. B. Allen, *M. C. B.* ....Farmington, Ia.
Chicago, Burlington & Quincy R. R.
4-8½ g. 2,924 m. 441 lo. 16,499 cars.
T. J. Potter, *Gen. Man* ....Chicago, Ill.
H. B. Stone, *Supt. Lo. & Car Dept.* .Chicago, Ill.
G. W. Rhodes, *S. M. P. & M.* ....Aurora, Ill.
Wm. Forsyth, *Mech. Eng* ....Aurora, Ill.
(1) C., B. & Q., East of Mo. Riv. 1,938 miles.
H. B. Stone, *Gen. Supt* ....Chicago, Ill.
Geo. B. Harris, *Pur. Agt* ....Chicago, Ill.
Ill. Divs.: J. D. Besler, *Supt* ....Galesburg, Ill.
Chi. Div.: Geo. Alexander, *Supt* ....Aurora, Ill.
L. E. Johnson, *M. M.* ....Aurora, Ill.
Galesburg Div.: F. C. Rice, *Supt.* Galesburg, Ill.
Robert Colville, *M. M.* ....Galesburg, Ill.
St. L. Div.: S. E. Crance, *Supt* ....St. Louis, Mo.
A. Forsyth, *M. M.* ....Beardstown, Ill.
Ia. & Mo. Divs.: K. H. Wade, *Supt.* .Burlington, Ia.
East. Div.: C. M. Levy, *Supt* ....Burlington, Ia.
Joel West, *M. M.* ....Burlington, Ia.
Mid. Div.: J. B. Maxon, *Supt* ....Ottumwa, Ia.
West'n Div.: W. T. Ryder, *Supt* ....Creston, Ia.
C. W. Eckerson, *M. M.* ....Creston, Ia.
(2) C., B. & Q., West of Mo. Riv. 935 miles.
G. W. Holdredge, *Gen. Supt* ....Omaha, Neb.
Geo. Hargreaves, *Pur. Agt* ....Omaha, Neb.
D. Hawksworth, *Gen. M. M.* ..Plattsmouth, Neb.
Bur. & Mo. Riv. & Neb. Ry. Divs.:
J. B. Phillippi, *Supt* ....Lincoln, Neb.
O. R. Newton, *M. M.* ....Lincoln, Neb.
R. V. Div.: A. Campbell, *Supt* ....Hastings, Neb.
A. & N. Div.: J. McConniff, *Supt* ..Lincoln, Neb.
Chicago, Milwaukee & St. Paul R. R.
4-8½ g. 3,951 m. 425 lo. 13,659 cars.
S. S. Merrill, *Gen. Man* ....Milwaukee, Wis.
J. T. Clarke, *Gen. Supt* ....Milwaukee, Wis.
J. T. Crocker, *Pur. Agt* ....Milwaukee, Wis.
J. M. Lowry, *Gen. M. M.* ....Milwaukee, Wis.
H. Watkeys, *M. M.* ....W. Milwaukee, Wis.
John Bailie, *Supt. Car Dept* ...Milwaukee, Wis.
La Crosse; Pr du Chien; Wis. Val.; Chi.; and
Chi. & Pac. Divs.:
H. C. Atkins, *Supt* ....Milwaukee, Wis.
Northern Div.: L. B. Rock, *Supt* ..Milwaukee, Wis.
Wm. E. Kittredge, *M. C. B.* ..Milwaukee, Wis.
So.-Wn Divs.: D. A. Olin, *Supt* ....Racine, Wis.
John Taylor, *M. M.* ....Racine, Wis.
E. A. Eddy, *M. C. B.* ....Racine, Wis.
Lines West of Mississippi River:
C. H. Prior, *A. Gen. Supt* ....Minneapolis, Minn.
H. & D. Div.: C. W. Case, *Supt.* Minneapolis, Minn.
J. O. Pattie, *M. M.* ....Minneapolis, Minn.
Ia. & Minn. Div.: H. R. Williams, *Supt.* do.
So. M. Div.: F. D. Underwood, *Supt.* La Crosse, Wis
Ia. & Da. Div.: G. W. Sanborn, *Supt.* Mason City, Ia.
S. Cy. & Da. Div.: J. Jackson, *Supt.* Sioux City, Ia.
F. H. Moulton, *M. M.* ....Yankton, Dak.
M. Pt. Div.: G. W. Cobb, *Supt* ....Mineral Pt., Wis.
Dubuque Div.: J. H. Jenkins, *Supt* ..Dubuque, Ia
S. Charnley, *M. M.* ....Dubuque, Ia.
Chicago, Pekin & So.-Wn. R. R. 4-8½ g. 88 m. 8 lo. 455 c.
A. H. Crocker, *Rec* ....Joliet, Ill.
A. H. Cook, *Pur. Agt* ....Chicago, Ill.
A. R. Overton, *M. M.* ....Joliet, Ill.
F. Shields, *M. C. B.* ....Streator, Ill.
Chicago, Rock Island & Pac. Ry.
4-8½ g. 1,381 m. 290 lo. 17,799 cars.
R. R. Cable, *V. P. & Gen. Man.* ...Chicago, Ill.
A. Kimball, *Gen. Supt* ....Davenport, Ia.
F. A. Marsh, *Pur. Agt* ....Chicago, Ill.
T. B. Twombly, *Gen. M. M.* ....Chicago, Ill.
B. K. Verbryck, *Gen. M. C. B.* ....Chicago, Ill.
Ill. Div.: R. H. Chamberlin, *Supt* ....Chicago, Ill.
R. Biester, *M. M.* ....Chicago, Ill.
Sam'l Pullman, *M. C. B.* ....Chicago, Ill.
Ia. Div.: H. F. Royce, *Supt* ....Des Moines, Ia
J. G. Crockett, *M. M.* ....Stuart, Ia.
Jas. E. Morrill, *M. M.* ....Davenport, Ia.
Chas. M. Leonard, *M. C. B.* ....Davenport, Ia.
So.-Wn. Div.: G. F. Walker, *Supt* ....Trenton, Ia.
R. A. Carscadin, *M. M.* ....Trenton, Ia.
Chas. R. Best, *M. C. B.* ....Trenton, Ia.
K. & Des. M. Div.: Jno. Given, *Supt* ...Keokuk, Ia.
S. W. Wakefield, *M. M.* ....Keokuk, Ia.
Henry Kummer, *M. C. B.* ....Keokuk, Ia.
Chi., Saginaw & Can. R. R. 4-8½ g. 38 m. 4 lo. 16 c.
J. A. Elwell, *Gen. Man. & Pur. Agt.* St. Louis, Mich.
Jas. T. Hall, *Supt* ....St. Louis, Mich.
Chicago, St. Louis & New Orleans R. R.
4-8½ g. 571 m. 101 lo. 1,913 cars.
J. C. Clarke, *V. P. & G. Man.* .New Orleans, La
L. T. Brien, *Asst. Gen. Man* ..New Orleans, La.
C. M. Sheafe, *Gen. Supt* ....New Orleans, La.
H. B. Febiger, *Pur. Agt* ....New Orleans, La.
W. H. Purdy, *Supt. Mach* ..McComb City, Miss.
Geo. W. Baxter, *M. C. B.* ...McComb City, Miss.
So. Div.: E. D. Anderson, *Acting Supt.* do.
W. P. McKinley, *M. M.* ...McComb City, Miss.
No. Div.: J. G. Mann, *Supt* ....Jackson, Tenn.
J. M. Keith, *M. M.* ....Jackson, Tenn.
J. F. White, *M. M.* ....Water Valley, Miss.
Chicago, St. Paul, Minneapolis & Omaha Ry.
4-8½ g. 1,037 m. 131 lo. 4,688 cars.
C. F. Hatch, *Gen. Supt* ....St. Paul, Minn.
W. H. S. Wright, *Pur. Agt* ....St. Paul, Minn.
Matt. Ellis, *M. M.* ....St. Paul, Minn.
W. B. Rice, *M. C. B.* ....St. Paul, Minn.
Ea. & No. Div.: T. P. Gere, *Supt.* St. Paul, Minn.
St. Paul Div.: J. F. Lincoln, *Supt.* St. Paul, Minn.
Sioux City Div.: H. Spencer, *Supt.* Sioux City, Ia.
F. W. Heintselman, *Gen. For. Sh.* Sioux Cy, Ia.
Neb. Div.: G. V. Morford, *Supt* ....Omaha, Neb.
Chicago, Texas & Mexican Central Ry.
4-8½ g. 52 m. 4 lo. 60 cars.
Gen. Supt ....Dallas, Tex.
Chas. Howard, *Pur. Agt* ....Chicago, Ill.
Chicago & Alton R. R. 4-8½ g. 840 m. 213 lo. 6,148 c.
J. C. McMullin, *Gen. Man* ....Chicago, Ill.
W. F. Merrill, *Gen. Supt* .... do.
A. V. Hartwell, *Pur. Agt* ....Chicago, Ill.
Wm. Wilson, *Supt. of Mach* ....Bloomington, Ill.
Jos. Townsend, *G. For. Car Dept.* do.
Chi. Div.: A. M. Richards, *Supt* ..Bloomington, Ill.
St. Louis Div.: T. M. Bates, *Supt* ..Roodhouse, Ill.
Kan. Cy. Div.: O. Vaughan, *Supt* ....Slater, Mo.
Wm. McPhail, *M. M.* ....Slater, Mo.
Chi. & East'n Ill. 4-8½ g. 248 m. 56 lo. 3,000 cars.
O. S. Lyford, *Gen. Supt* ....Chicago, Ill.
D. R. Patterson, *Pur. Agt* ....Chicago, Ill.
P. W. Drew, *M. Trans* ....Chicago, Ill.
Allen Cook, *M. M.* ....Danville, Ill.
Jas. T. Kerney, *M. C. B.* ....Danville, Ill.
Chicago & Grand Trunk Ry. (*See Grand Trunk.*)
Chicago & Iowa R. R. 4-8½ g. 104 m. 15 lo. 237 cars.
T. J. Potter, *Gen. Man* ....Chicago, Ill.
W. H. Holcomb, *Rec* ....Rochelle, Ill.
H. S. Bryan, *M. M.* ....Aurora, Ill.
Chicago & Northwestern Ry.
4-8½ g. 3,281 m. 558 lo. 18,650 cars.
Marvin Hughitt, *2d V. Pres. & G. M.* Chicago, Ill.
J. D. Layng, *Gen. Supt* ....Chicago, Ill.
W. G. Brownson, *Asst. Supt* ....Boone, Ia.
R. W. Hamer, *Pur. Agt* ....Chicago, Ill.
Geo. W. Tilton, *Supt. M. P. & M.*; and
J. M. Boon, *A. Supt. M. P. & M.* ....Chicago, Ill.
Wis. and Mil. Divs. & Sheboygan & W'n Ry.:
Chas. D. Gorham, *Supt* ....Chicago, Ill.
Gal. Div.: Chas. Murray, *Supt* ....Chicago, Ill.
Pen'r Div.: W. B. Linsley, *Supt* ....Escanaba, Mich.
Geo. H. White, *M. M.* ....Escanaba, Mich.
Mad. Div.: C. A. Swineford, *Supt.* Baraboo, Wis.
Win. & St. P. Div.: S. Sanborn, *Supt.* Winona, Minn
W. A. Scott, *M. M.* ....Winona, Minn.
Dak. Cen. Ry.: T. J. Nicholl, *Supt* ....Huron, Dak.
Mil. & Mad. Ry.: J. B. Trull, *Supt* ....Galena, Ill.
Ia. Div.: J. M. Whitman, *Supt* ....Clinton, Ia.
Geo. W. Lowe, *M. M. & M. C. B.* Clinton, Ia.
No. Ia. Div.: H. G. Burt, *Supt* ....Eagle Grove, Ia.
Chicago & West Michigan:
4-8½ g. 366 m. 43 lo. 1,345 cars.
Geo. C. Kimball, *V. P. & G. Man.* Muskegon, Mich.
C. Harris, *Gen. Supt* .... " "
H. Park, *Pur. Agt* .... " "
L. E. Hitchcock .... " "
C. & W. M. Rd.: C. M. Lawler, *Supt* St. Joseph, Mich.
Russell Booth, *M. M.* ....Muskegon, Mich.
Gr. Hav. Rd.: F. H. May, *Manager* Allegan, Mich.
Russell Booth, *M. M.* ....Muskegon, Mich.
Gr. Rap. Rd.: A. M. Nichols, *Supt.* Gr. Rapids, Mich
C. J. Howard, *M. M.* ....Grand Rapids, Mich.
Cincinnati, Columbus & Hocking Val. Ry.
4-9 g. 25 m. 1 lo. 27 cars.
J. E. Gimperling, *Gen Man* ....Dayton, O.
Geo. F. Robinson, *Supt* ....Washington, O.
Cin., Georgetown & Portsmouth. 3 g. 35 m. 2 lo. 39 c.
A. T. Roever, *Gen Man* ....Cincinnati, O.
J. C. Homer, *M. M.* ....Cincinnati, O.
Cincinnati, Green Riv. & Nashville R. R. 3 g.
A. C. Sim, *Supt* ....King's Mountain, Ky.
G. Brashears, *Pur. Agt* ....Cincinnati, O.
Cincinnati, Hamilton & Dayton R. R. (*See C., C., C. & I.*)
Cincinnati, Indianapolis, St. Louis & Chicago Ry.
4-8½ g. 345 m. 60 lo. 1,930 cars.
J. W. Sherwood, *Supt* ....Indianapolis, Ind.
Geo. Tozzer, *Pur. Agt* ....Cincinnati, O.
J. S. Patterson, *M. of Mach. & M. C. B.* Cincinn., O.
Cincinnati, New Orleans & Texas Pacific Ry. Co.
5 g. 841 m. 96 lo. 2,687 cars.
John Scott, *V. Pres. & Gen. Man.* Cincinnati, O.
James Meehan, *Gen. M. M.* ....Ludlow, Ky.
Cin. So. Div.: Cecil Fleming, *Gen. Supt* ..Cin., O.
Julius Uihlein, *Pur. Agt* ....Cincinnati, O.
Frank Allingham, *M. M.* ....Cincinnati, O.
A. Thomson, *M. M.* ....Chattanooga, Tenn.
Ala. Gr. S'n Div.: C. B. Wallace, *Gen. Supt.* and
R. W. Healey, *Pur. Agt* ....Chattanooga, Tenn.
George Manuell, *M. M.* ....Chattanooga, Tenn.
Fred Morgan, *M. C. B.* ....Chattanooga, Tenn.
V. & M. Div.: E. F. Raworth, *G. S.* Vicksburg, Miss.
James B. Browne, *M. M.* ....Vicksburg, Miss.
V. S. & P. Div.: F. Y. Dabney, *Supt.* Monroe, La.
W. Bell Smith, *M. M. & C. B.* ....Monroe, La.
Cincinnati Northern Ry. 3 g. 30 m. 4 lo. 60 c.
G. L. Barringer, *Gen. Man* ....Cincinnati, O.
C. W. Bradley, *Pur. Agt* ....Cincinnati, O.
T. J. Hamer, *M. M. & C. B.* ....Cincinnati, O.
Cincinnati, Selma & Mobile R. R. 5 g. 45 m. 2 lo. 39 c.
D. McLaren, *Supt* ....Selma, Ala.
Simon Hertz, *Pur. Agt* ....Selma, Ala.
J. M. Levis, *M. M.* ....Marion, Ga.
Cincinnati Southern Ry. (*See Cin., N. O. & Tex. Pac.*)
Cin., Wabash & Mich. Ry. 4-8½ g. 110 m. 8 lo. 139 c.
Norman Beckley, *Gen. Man. & P. A.* Elkhart, Ind.
O. W. Lamport, *Supt* ....Wabash, Ind.
S. B. Tinker, *M. M. & M. C. B.* ....Wabash, Ind.
Cincinnati & Eastern Ry. 3 g. 76 m. 4 lo. 66 cars.
P. W. Naughton, *M. M.* ....Cincinnati, O.
Clarksburg, Weston & Glenville R. R.
3 g. 26 m. 2 lo. 21 cars.
A. H. Kunst, *Supt* ....Weston, W. Va.
Sam. A. Steel, *M. M.* ....Weston, W. Va.
F. Dillie, *M. C. B.* ....Nottingham, O.
Cleve., Akron & Col. R. R. 4-9 g. 144 m. 14 lo. 638 c.
N. Monsarrat, *Gen Supt* ....Akron, O.
M. M. & C. B. ....Akron, O.
Cleve., Col., Cin. & Ind. Ry:
Cin., Ham. & Dayton and Ind. & St. Louis.
4-8½ g. 812 m. 246 lo. 7,082 cars.
J. H. Devereux, *Pres* ....Cleveland, O.
E. B. Thomas, *Gen. Man* ....Cleveland, O.
J. L. Yale, *Pur. Agt* ....Cleveland, O.
W. F. Turreff, *Gen. M. M.* ....Cleveland, O.
(1) Cl., Col., Cin. & Ind. Divs. 471 m. 162 lo. 4,768 c.
Col. & Cin. Div.: Robt. Blee, *Supt* .Cleveland, O.
W. L. Gilmore, *M. M.* ....Cleveland, O.
A. G. Steinbrenner, *G. For. Car Dept.* do.
Ind'p'lis Div.: C. C. Gale, *Supt.* Indianapolis, Ind.
J. K. Lape, *M. M.* ....Brightwood, Ind.
N. Mark, *G. For. Car Dept.* Brightwood, Ind.
Day. & Union: H. S. Gordon, *M. M.* ....Dayton, O.
(2) Cin., Ham. & Day. Divs. 341 m. 84 lo. 2,314 c.
J. H. Barrett, *Gen. Supt* ....Cincinnati, O.
Jas. Eckford, *M. M.* ....Cincinnati, O.
W. H. H. Allison, *G. For. Car Dept.* do.
C. R. & C. Div.: W. S. Brewer, *M. M.* Richm'd, Ind.
D. & M. Rd.: J. H. Barrett, *Supt* ....Toledo, O.
Jno. Black, *M. M.* ....Lima, Ohio.
Cleveland & Pittsburg R. R. (*See Penna. Co.*)
Cleveland, Tuscarawas Valley & Wheeling Ry.
4-8½ g. 158 m. 23 lo. 1,522 cars.
Oscar Townsend, *Gen. Man* ....Cleveland, O.
Wm. Thornburg, *Supt* ....Cleveland, O.
W. A. Stone, *M. M.* ....Lorain, O.
Cleve. & Marietta R. R. 4-8½ g. 99 m. 9 lo. 157 cars.
S. C. Baldwin, *Gen. Man* ....Marietta, O.
R. B. Hoover, *Pur. Agt* ....Marietta, O.
E. C. Hill, *M. M.* ....Marietta, O.
Coburg, Peterborough & Marmora Ry.
5-6 g. 47 m. 5 lo. 207 cars.
Jas. R. Barber, *Gen. Supt* ....Cobourg, Ont.
Jas. Clark, *M. M.* ....Cobourg, Ont.
John Tinney, *M. C. B.* ....Cobourg, Ont.
Columbia & Greenville R. R. (*See Rich. & Dan.*)
Columbus, Hocking Valley & Toledo Ry.
4-9 g. 319 m. 76 lo. 6,000 cars.
Orland Smith, *Gen Man* ....Columbus, O.
G. R. Carr, *Gen. Supt. & Pur. Agt.* Columbus, O.
J. G. Hutchins, *M. M.* ....Columbus, O.
J. M. Rockafield, *M. C. B.* ....Columbus, O.
Tol. Div.: M. T. Seymour, *Supt* ....Columbus, O.
Hock. V. Div.: M. P. L. Booth, *Supt.* Columbus, O.
Ohio Riv. Div.: C. D. Norris, *Supt* ....Logan, O.
Columbus & Maysville Ry. (*See Cin. & East.*)
Columbus & Rome R. R. 3 g. 32 m. 2 lo. 25 cars.
M. E. Gray, *Supt* ....Columbus, O.
Columbus & Western Ry. 5 g. 89 m. 2 lo. 19 cars.
E. A. Llewellen, *Gen. Man.* ....Opelika, Ala.
R. A. Bridges, *M. M.* ....Opelika, Ala.
Concord & Claremont R. R. (*See Northern of N. H.*)
Conn. Riv. and Ver. Val. R. Rs. 4-8½ g. 130 m. 33 lo. 456 c.
J. Mulligan, *Supt & Pur. Agt.* Springfield, Mass.
W. H. Stearns, *M. M.* ....Springfield, Mass.
Robert Hitchcock, *M. C. B.* ...Springfield, Mass.
Connotton Valley R. R. 3 g. 109 m. 10 lo. 531 cars.
W. W. Hungerford, *Gen. Man* ....Canton, O.
Supt ....Canton, O.
A. B. Proal, *Pur. Agt* ....Canton, O.
M. M. ....Canton, O.
Cornwall R. R. 4-8½ g. 9 m. 5 lo. 100 cars.
Frank Donahue, *G. Supt. & M. M.* Lebanon, Pa.
Levi Bloch, *M. C. B.* ....Lebanon, Pa.

Credit Valley Ry. 4-8½ g. 184 m. 22 lo. 484 cars.
James Ross, *Gen. Supt* ....Toronto, Ont.
John Macnab, *Pur. Agt*..........Toronto, Can.
H. G. Taylor, *Mech. Supt* ....Toronto, Can.
Crown Point Iron Co. R. R. 3 g. 13 m.
A. L. Inman, *Gen. Man*..........Plattsburg, N. Y.
J. M. Davies, *Supt. & M. M.*.Crown Point, N. Y.
J. C. Sherman, *M. C. B*..... Crown Point, N. Y.
Cumberland & Pennsylvania R. R. 4-8½ g. 55 m.
P. L. Burwell, *Gen Supt & P A*.Cumberland, Md.
N. W. Howson, *Mast. of Mach*.Mt. Savage, Md.
Nathan Binix, *M. C. B*..........Mt. Savage, Md.
Cumberland Valley R. R. 4-9 g. 125 m. 21 lo. 280 cars.
J. F. Boyd, *Supt*..........Chambersburg, Pa.
A. S. Hull, *M. M*..........Cnambersburg, Pa.
C. Wickey, *F. C. R*..........Chambersburg, Pa.

D

Danbury & Norwalk R. R. 4-8½ g. 33 m. 6 lo. 100 c.
L. W. Sandiforth, *G. Supt. & P. A*..S. Norwalk, Ct.
N. M. George, *M. M. & C. B*....Danbury, Conn.
Danville, Mocksville & So.-Wn. R. R. 3 g. 28 m.
H. W. Goodrich, *Ch. Eng*.....Leakesville, N. C.
Danville, Olney & O. R. R.R. 4-8½ g. 110 m. 4 lo. 83 c.
C. Howard, *G. Man. & Pur. Agt*..Boston, Mass.
J. M. Graham, *Supt*..........Kansas, Ill.
Louis Parisoe, *M. M & C. B*..........Kansas, Ill.
Dayton & Union R. R. (*See Ohio Ry.*)
Delaware, Lackawanna & Western R. R.
4-8½ g. 670 m. 348 lo. 26,187 cars.
Wm. F. Halstead, *Gen. Supt*.......Scranton, Pa.
G. W. B. Cushing, *Pur. Agt*. . New York, N. Y.
Walter Dawson, *Mast. of Mach*...Scranton, Pa.
Robt. McKenna, *M. C. B*..........Scranton, Pa.
Bloomsb'g Div.: C. Graham, *M. M*..Kingston, Pa.
Utica Div.: A. C. Salisbury, *Supt*....Utica, N. Y.
Thos. Thatcher, *M. M*..........Utica, N. Y.
Morris & Essex Div. and Sussex R. R.:
A. Reasoner, *Supt*..........Hoboken, N. J.
W. H. Lewis, *M. M*.......... Kingsland, N. J.
J. W. Baker, *Mast. Car Rep*. ....Dover, N. J.
Oswego & Syracuse Div.:
W. B. Phelps, *Supt*..........Oswego, N. Y.
Jas. Buchanan, *M. M*. ....Syracuse, N. Y.
Syracuse, Binghamton & New York R. R.
4-8½ g. 81 m. 20 lo. 598 cars.
W. K. Niver, *Gen. Supt*.......Syracuse, N. Y.
Jas. Buchanan, *M. M*..........Syracuse, N. Y.
Delaware Western R. R. 4-8½ g. 20 m. 4 lo. 30 cars.
David Connell, *Supt*..........Wilmington, Del.
Delaware & Chesapeake R. R. 4-8½ g. 54 m. 3 lo. 16 c.
O. S. Sanford, *Supt*.......... Oxford, Md.
Joseph A. Baynard, *M. M*..........Oxford, Md.
Chas. E. Mason, *M. C. B*.......... .Oxford, Md.
Delaware & Hudson Canal Co.
4-3 and 4-8½ g. 596 m. 151 lo. 9,248 cars.
C. F. Young, *Gen. Man*.......... Honesdale, Pa.
C. F. Young, *Pur. Agt*..........Albany, N. Y.
R. C. Blackall, *Supt. of Mach*.... .Albany N. Y
Susq. Div.: C. D. Hammond, *Supt*. Albany, N. Y.
C. A. Jones, *M. M*..........Oneonta, N. Y.
J. R. Skinner, *M. C. B*. ....Oneonta, N. Y.
Sar. & Ch. Divs.: T. Voorhees, *Supt*...Troy, N. Y.
J. L. Corey, *M. M*.......... Green Island, N. Y.
Chr. Körner, *M. C. B*..... Green Island, N. Y
Pa. Div.: R. Manville, *Supt & Pur Agt*. and
S. H. Dotterer, *M. M*..........Carbondale, Pa.
T. Orchard, *M. C. B*.......... Carbondale, Pa.
Denver & Rio Grande Ry. 3 g. 1,062 m. 170 lo. 4,617 c.
D. C. Dodge, *Gen. Man*..........Denver, Col.
Geo. W. Ristine, *Asst. Gen. Man*...Denver, Col.
A. B. Garner, *Pur. Agt*..........Denver, Col.
N. W. Sample, *M. M*..........Denver, Col.
M. C. B..........Burnham, Col
1st Div.: W. H. Bancroft, *Supt*....S. Pueblo, Col.
2d Div.: R. M. Ridgway, *Supt*..... Alamosa, Col.
3d Div.: Cole Lydon, *Supt*..........Leadville, Col
4th Div.: J. A. Myers, *Supt*.......... Salida, Col.
Des Moines & Ft. Dodge. 4-8½ g. 87 m. 11 lo. 158 c.
C. N. Gilmore, *Supt*..........Des Moines, Ia.
John McGrayel, *M. M*......Grand Junction, Ia.
E. A. Avery, *M. C. B*.......Grand Junction, Ia.
Det., Gr. H. & Mil. Ry. 4-8½ g. 189 m. 36 lo. 478 c.
G. R. Nash, *Gen. Man*..........Detroit, Mich.
John S. Lorimer, *Storekeeper*....Detroit, Mich.
W. J. Morgan, *Supt*..........Detroit, Mich.
F. Parker, *Mech. Supt*..........Detroit, Mich.
Det., Lansing & No'n R. R. 4-8½ g. 222 m. 84 lo. 1027 c
John B. Mulliken, *Gen. Man*......Detroit, Mich.
Allan Bourn, *Pur. Agt*..........Detroit, Mich.
Thos. M. Fish, *Gen. Supt*..........Ionia, Mich.
G. C. Watrous, *M. M. & C. B*......Ionia, Mich.
Det., Mack. & Marq. R. R. 4-8½ g. 151 m. 8 lo. 227 c.
Thos. McKeown, *Gen. Supt*...Marquette, Mich.
E. W. Allen, *Pur. Agt*..........Marquette, Mich.
John Wilson, *Mech. Supt*......Marquette, Mich.
Dorchester & Delaware R. R. 4-8½ g. 33 m.
Thos. E. Wright, *Supt*..........Cambridge, Md.
Dubuque & Dakota R. R. 4-8½ g. 64 m. 2 lo. 54 cars.
A. C. Goodrich, *Supt*..........Waverly, Ia.
W. S. Couch, *Pur. Agt*..........Dubuque, Ia.
Duck River Valley R. R. 3 g. 34 m.
Geo. Childress, *Supt*..........Columbia, Tenn.
Dunkirk, Allegheny Valley & Pittsburgh R. R.
4-8½ g. 91 m. 14 lo. 102 cars.
D. Thayer, *Gen. Supt*..........Dunkirk, N. Y.
R. C. Moore, *Pur. Agt*...... .New York, N. Y.
J. C. Haggett *M. M. & C. B*.....Dunkirk, N. Y.

E

East Broad Top R. R. 3 g. 30 m. 6 lo. 191 cars.
A. W. Sims, *Supt*..........Orbisonia, Pa.
G. A. Haggerty, *M. M*..........Orbisonia, Pa.
East Tennessee, Virginia & Georgia R. R.
5 g. 1,185 m. 133 lo. 1,597 cars.
Henry Fink, *Gen. Man*..........Lynchburg, Va.
J. F. O'Brien, *Gen. Supt*.......Knoxville, Tenn.
Main Stem; Ohio; and No. Car. Divs.:
F. K. Huger, *Supt*..........Knoxville, Tenn.
B. J. Sitton, *M. M*..........Knoxville, Tenn.
Jos. Armbruster, *M. C. B*....Knoxville, Tenn.
Selma and Alabama Central Divs.:
John M. Bridges, *Supt*..........Selma, Ala.
Simon Gay, *M. M*.......... Selma, Ala.
W. W. Pierce, *M. C. B*..........Selma, Ala.
Memphis & Charleston R. R. (Div.):
R. B. Pegram, Jr., *Supt*..... Memphis, Tenn.
H. N. Burford, *M. M*..........Memphis, Tenn.
M. C. B..........Memphis, Tenn.
Macon & Brunswick Div.:
J. F. Mallory, *Supt*..........Macon, Ga.
G. R. Wagnon, *M. M*..........Macon, Ga.
Georgia Division:
W. V. McCracken, *Supt*..........Atlanta, Ga.
Eastern R. R. 4-8½ g. 283 m. 99 lo. 2,208 cars.
D. W. Sanborn, *Mast. of Trans*..Boston, Mass.
Geo. J. Fisher, *Pur. Agt*..........Boston, Mass.
Amos Pillsbury, *S. M. P. & M*...E. Boston, Mass.
J. D. Billings, *M. C. B*..........Salem, Mass.
Con'y Div.: J. W. Sanborn, *Supt*., Wolfboro J., N. H.
Eastern Kentucky R. R. 4-8½ g. 34 m. 5 lo. 123 c.
H. W. Bates, *V. P. & Manager*...Greenup, Ky.
Geo. Gibbs, *Pur. Agt*..........Riverton, Ky.
D. S. Weaver, *M. M*..........Riverton, Ky.
Eastern Shore R. R. 4-8½ g. 38 m. 2 lo.
W. Thompson, *Supt*..........Princess Anne, Md.
F. Strattner, *M. M*.......... Princess Anne, Md.
Elberton Air-Line R.R. (*See Rich. & Dan. N. G. Brs.*)
Elizabeth City & Norfolk R. R. 4-8½ g. 79 m. 5 lo. 96 c.
M. K. King, *Gen. Man. & Pur. Agt*.Norfolk, Va.
J. S. Whitworth, *M. M. & C. B*....Norfolk, Va.
Erie & Pittsburgh R. R. (*See Penna. Co.*)
Eureka & Palisade R. R. 3 g. 97 m. 7 lo. 124 cars.
P. Everts, *Gen. Supt & Pur. Agt*..Eureka, Nev.
J. P. Rugg, *M. M*..........Palisade, Nev.
A. S. Longley, *M. C. B*..........Palisade, Nev.
Europ. & No. Amer. Ry. 4-8½ g. 114 m. 15 lo. 557 c.
F. W. Cram, *Supt. & Pur. Agt*.... Bangor, Me.
A. O. Bailey, *M. M. & C. B*. Mattawamkeag, Me.
Evansville, Paducah & Cairo Line, 200 miles.
G. J. Grammer, *Supt*..........Evansville, Ind.
Evansville, Rockport & E'n Ry. 4-9 g. 71 m. 5 lo. 98 c.
H. L. Shepard, *Supt*..........Evansville, Ind.
Evansv. & Terre Haute. 4-8½ g. 114 m. 26 lo. 900 c.
C. J. Hepburn, *Gen. Supt*...... Evansville, Ind.
John Torrence, *Gen. For*......Evansville, Ind.

F

Fitchburg R. R., 4-8½ g. 189 m. 100 lo. 3,315 cars.
John Adams, *Gen. Supt*..........Boston, Mass.
E. K. Turner, *Asst. Supt*..... Fitchburg, Mass.
F. S. Pratt, *Pur. Agt*..........Boston, Mass.
W. A. Foster, *Acting Supt. M. P. & M.*; and
J. W. Marden, *M. C. B*.......... Charlestown, Mass.
Flint & Pere Marq. 4-8½ g. 318 m. 52 lo. 1,556 cars.
H. C. Potter, *Gen. Man*..... E. Saginaw, Mich.
D. Edwards, *Asst. Gen. Man*..E. Saginaw, Mich.
G. G. Cook, *Pur. Agt*..........E. Saginaw, Mich.
Sanford Keeler, *Gen. Supt*..E. Saginaw, Mich.
W. F. Potter, *Supt.* (E. Div.)..E. Saginaw, Mich.
M. V. Meredith, *Supt.* (W. Div.)E. Saginaw, Mich.
T. J. Hatswell, *M. M*..........E. Saginaw, Mich.
R. McPherson, *M. C. B*..........E. Saginaw, Mich.
Florida Central & Western R. R.
5 g. 234 m. 16 lo. 160 cars.
Wm. M. Davidson, *Gen. Man*.Jacksonville, Fla.
Supt..........Tallahassee, Fla.
Jas. S. McElroy, *M. M. & C. B*.Jacksonville, Fla.
Florida Southern Ry. 3 g. 50 m. 5 lo. 53 cars.
H. S. Ming, *Gen. Supt*..........Palatka, Fla.
F. A. Garrison, *Pur. Agt*..........Palatka, Fla.
J. W. Roberts, *M. M. & C. B*..... Palatka, Fla.
Florida Transit R. R. 5 g. 224 m.
D. E. Maxwell, *Gen. Supt*.... .Fernandina, Fla.
John Hedges, *Pur. Agt*..........Fernandina, Fla.
J. V. Webster, *M. M*..........Fernandina, Fla.
G. Hernandez, *M. C. B*..... .Fernandina, Fla.
Fonda, Johnst'n & Gloversv. 4-8½ g. 20 m. 5 lo. 18 c.
Lawton Caten, *Supt*..........Gloversville, N. Y.
Fond du Lac, Amboy & Peoria. 3 g. 30 m. 2 lo. 35 c.
Alonzo Kinyon, *Supt. & P. A*.Fond du Lac, Wis.
Fort Dodge & Fort Ridley R. R. 4-8½ g.
G. R. Pearson, *Supt*..........Fort Dodge, Ia.
Ft. Madison & No.-West'n Ry. 3 g. 41 m. 4 lo. 120 c.
S. B. Kenrick, *Supt. & Pur. Agt*.Ft. Madison, Ia.
L. Lamb, *M. M. & C. B*..........Ft. Madison, Ia.
Ft. Wayne, Cin. & Louisv. 4-8½ g. 108 m. 9 lo. 249 c.
White Water R. R. 4-8½ g. 62 m. 5 lo. 170 cars.
W. W. Worthington, *Gen. Supt*.Ft. Wayne, Ind.
W. D. Morris, *M. M. & C. B*..Ft. Wayne, Ind.
Ft. Wayne & Jackson. 4-8½ g. 100 m. 10 lo. 353 c.
Gen. Supt. & P. A..........Jackson, Mich.
C. W. Hollister *M. M. & C. B*... Jackson, Mich.
Fulton County N. G. Ry. 3 g. 47 m. 2 lo. 106 cars.
A. C. Atherton, *Gen. Supt. & P. Agt*.Lewiston, Ill.

G

Galveston, Harrisburg & San Antonio Ry.
4-8½ g. 492 m. 47 lo. 1870 cars.
Jas. Converse, *Gen. Supt*..........Houston, Tex.
Chas. Babbidge, *Pur. Agt*..........Boston, Mass.
D. T. Davis, *Supt. M. P. & M*..Harrisburg, Tex.
James Alexander, *M. C. B*.. . Harrisburg, Tex.
El Paso Div. (*See Cen. Pac.*) 4-8½ g. 144 miles.
Galveston, Houston & Henderson R. R.
4-8½ g. 50 m. 17 lo. 212 cars.
W. H. Harding, *G. Man. & P. Agt*.Galveston, Tex.
Allen McCoy, *Supt*..........Galveston, Tex.
J. G. Conlon, *M. M*.......... Galveston, Tex.
Geneva, Ithaca & Sayre R. R. (*See Lehigh Val.*)
Georgia R. R. 5 g. 307 m. 42 lo. 938 cars.
John W. Green, *Gen. Man*..........Augusta, Ga.
John S. Cook, *M. M*.......... Augusta, Ga.
T. M. Preval, *M. C. B*..........Augusta, Ga.
Georgia Pacific Ry. (Miss. Div.). 3 g. 43 m. 2 lo. 44 c.
C. M. Bolton, *Supt*..........Greenville, Miss.
W. M. Sutton, *Pur. Agt*.......Greenville, Miss.
Benj. Davis, *M. M*..........Greenville, Miss.
J. B. Shelton, *M. C. B*.......... .Greenville, Miss.
Grand Haven R. R. (*See Chic. & W. Mich.*)
Grand Junction R'y. (*See Midland of Can.*)
G'd Rap., Newaygo & L. S. R. R. (*See Chic. & W. M.*)
Grand Rapids & Indiana. 4-8½ g. 456 m. 46 lo. 1,566 c.
W. O. Hughart, *Gen. Man*.Grand Rapids, Mich.
W. R. Shelby, *Pur. Agt*....Grand Rapids, Mich.
S. D. Bradley, *M. M*...... Grand Rapids, Mich.
No'n Div.: J. M. Metheany, *Supt*.G'nd Rap., Mich.
So'n Div.: P. S. O'Rourke, *Supt*.Fort Wayne, Ind.
Grand Tower & Carbondale. 4-8½ g. 25 m. 6 lo. 357 c.
T. M. Williamson, *Supt. & P. A*..Gr. Tower, Ill.
Hugh Smith, *M. M. & C. B*...Grand Tower, Ill.
Grand Trunk Ry. 4-8½ g. 1,267 m. 434 lo. 9,403 c.
Joseph Hickson, *Gen. Man*.......Montreal, Can.
Wm. Wainright, *Asst. Gen. Man*.Montreal, Can.
Gr. Tr. Divs: W. J. Spicer, *Supt*.Montreal, Can.
Jno. Taylor, *Gen. Storekeeper*.Montreal, Can.
Herbert Wallis, *Mech. Supt*...Montreal, Can.
Wm. McWood, *M. C. B*....... Montreal, Can.
F. R. F. Brown, *Asst. M. S*....Montreal, Can.
J. Davis Barnett, *Asst. M. S*..Stratford, Ont.
Chi. & Gr. Trunk Ry. 4-8½ g. 330 m. 56 lo. 1,191 c.
S. R. Callaway, *Gen. Man*....... Chicago, Ill.
W. H. Pettibone, *Supt*. ..Battle Creek, Mich.
N. Wall, *Pur. Agt*..........Fort Gratiot, Mich.
H. Roberts, *Mech. Supt*....Port Huron, Mich.
Great Western Ry. 4-8½ g. 823 m. 216 lo. 5,039 c.
Chas. Stiff, *Asst. Gen. Man*......Hamilton, Ont.
John Burton, *Supt*..........Hamilton, Ont.
E. R. Baines, *Pur. Agt*..........Hamilton, Ont.
C. K. Domville, *Loco. Supt*......Hamilton, Ont.
C. F. Hanson, *M. M*..........London, Ont.
Henry Childs, *Car Supt*..........London, Ont.
Green Bay, Winona & St Paul R. R.
4-8½ g. 250 m. 19 lo. 599 cars.
Timothy Case, *V. P., Gen. Man*.Green Bay, Wis
James S. Mott, *Pur. Agt*...... Green Bay, Wis.
A. Fenwick, *M. M*.......... Ft. Howard, Wis.
Gulf, Col. & Santa Fé Ry. 4-8½ g. 400 m. 32 lo. 1,000 c.
John Sealy, *Gen. Man*..........Galveston, Texas.
F. P. Killeen, *Asst. Gen. Man. & Pur. Agt*. do.
G. B. Nichols, *M. M*.......... ...Galveston, Texas.
W. H. Martin, *M. C. B*..........Galveston, Texas.
Gulf, W'n Texas & Pac. Ry. 4-8½ g. 68 m. 6 lo. 70 c.
M. D. Monserrate, *Pr. & Supt*....Cuero, Texas.
James Mooney, *M. M*..........Cuero, Texas.

H

Halifax & Cape Breton Ry. 4-8½ g. 79 m. 5 lo. 237 c.
H. Abbott, *Manager*..........New Glasgow, N. S.
Hannibal & St. Jo. R. R. 4-8½ g. 292 m. 76 lo. 1,860 c.
John B. Carson, *Gen. Man*..........Hannibal, Mo.
W. R. Woodard, *Supt*..........Hannibal, Mo.
T. L. Dunn, *Ch. Eng. & Pur. Agt*..Hannibal, Mo.
Jas. Long, *Supt. M. P. & Car Dep*.Hannibal, Mo.
Hanover Junction, Hanover & Gettysburg R. R.
4-8½ g. 74 m. 9 lo. 106 cars.
H. D. Scott, *Gen. Supt*..........Hanover, Pa.
John J. Bingley *M. M*..........Hanover, Pa.
Henry Britcher, *M. C. B*..........Hanover, Pa.
Harrisburg & Potomac R. R. 4-8½ g. 27 m. 2 lo. 7 c.
R. H. Middleton, *Supt*......Boiling Springs, Pa.
Hartford & Conn. Val. R. R. 4-8½ g. 45 m. 7 lo. 196 c.
Samuel Babcock, *Pr. & Supt*......Hartford, Ct.
S. E. Brewer, *M. M*..........Hartford, Conn.
Hartford & Conn. W'n R. R. 4-8½ g. 69 m. 10 lo. 235 c.
John F. Jones, *Supt*..........Hartford, Ct.
J. C. Barton, *M. M*..........Hartford, Ct.
Housatonic R. R. 4-8½ g. 126 m. 22 lo. 495 cars.
W. H. Yeomans, *Supt*..........Bridgeport, Ct.
D. S. Draper, *Pur. Agt*..........Bridgeport, Ct.
N. Slingland, *M. M*..........Falls Village, Ct.
J. J. Ferris, *M. C. B*..........Falls Village, Ct.
Houston Belt Ry. 4-8½ and 3 gauge 50 miles.
S. L. Werden, *V. P. & Gen. Man*.Houston, Tex.
Houston, East & West Tex. Ry. 3 g. 109 m. 6 lo. 224 c.
Paul Bremond, *Pr. & Pur. Agt*..Houston, Tex.
E. L. Bremond, *Gen. Man*..........Houston, Tex.
A. Riggs, *M. M*..........Houston, Tex.
Houston & Tex. Cen. Ry. 4-8½ g. 701 m. 78 lo. 2,526 c.
G. Jordan, *V. Pr. & Gen. Man*....Houston, Tex.
A. H. Swanson, *Gen. Supt*..........Houston, Tex.
E. S. Larchar, *Pur. Agt*..........New York, N. Y.
L. C. Noble, *Gen. M. M*..........Houston, Tex.
James McGee, *M. C. B*..........Houston, Tex.
So. & Wn. Divs.: M. G. Howe, *Supt*.Houston, Tex.
No. & Ml. Divs.: G. A. Quinlan, *Supt*., and
C. H. Burns, *Asst. M. M*..... Corsicana, Tex.
No.-Wn. Div.: Donald Allen, *Supt*.... Waco, Tex.
Humeston & Shenandoah R. R.
4-8½ g. 85 m. 5 lo. 72 cars.
F. O. Wyatt, *Gen. Man*..........Clarinda, Ia.
Huntingdon & Br. Top Mt. 4-8½ g. 62 m. 18 lo. 69 c.
Geo. F. Gage, *Gen. Supt*. ... Huntingdon, Pa.
Samuel B. Knight, *Pur. Agt*..Philadelphia, Pa.
William Barkla, *M. M*..........Saxton, Pa.

I

Illinois Central R. R. 4-8½ g. 1,554 m. 224 lo. 6,172 c.
E. T. Jeffery, *Gen. Supt*..........Chicago, Ill.
C. A. Beck, *Asst. Gen. Supt*..........Chicago, Ill.
O. Ott, *Pur. Agt*..........Chicago, Ill.
S. J. Hayes, *Supt. of Mach*..........Chicago, Ill.
W. B. Snow, *M. M. Car Works*.....Chicago, Ill.
Chic. Div.: T. J. Hudson, *Supt*. ......Cairo, Ill.
Henry Schlacks, *M. M*..........Chicago, Ill.
Mid. Div.: H. L. Frisbie, *Supt*..........Pontiac, Ill.
Spring. Div.: W. Wilkinson, *Supt*.Springfield, Ill.
W. B. McKenna, *M. M*..........Clinton, Ill.
No'n Div.: J. C. Jacobs, *Supt*..........Amboy, Ill.
J. B. Edams, *M. M*..........Amboy, Ill.
So. Div.: David Oxley, *M. M*..... Centralia, Ill.
Ia. Div.: D. W. Parker, *Supt*.......... Dubuque, Ia.
Thos. W. Place, *M. M*..........Waterloo, Ia.
Illinois Midland Ry. 4-8½ g. 176 m. 12 lo. 611 cars.
D. H. Conklin, *Rec. & Gen. Man*......Decatur, Ill.
E. D. Frost, *Gen. Supt*.......... do.
J. G. Clifford, *M. M*..........Terre Haute, Ind.
Illinois & St. Louis R. R. 4-8½ g. 18 m. 5 lo. 402 c.
C. H. Sharman, *Gen. Supt. & P. A*.Belleville, Ill.
E. Hockett, *M. M*..........Belleville, Ill.
Charles Rotha, *M. C. B*..... E. St. Louis, Ill.
Indiana, Bloomington & Western Ry.
4-8¾ g. 712 m. 64 lo. 3,650 cars.
C. E. Henderson, *Gen. Man*. Indianapolis, Ind.
H. C. Norton, *Pur. Agt*...... Indianapolis, Ind.
B. Warren, *Gen. M. M*..........Indianapolis, Ind.
Peoria Div.: I. H. Wilson, *Supt*..Indianapolis, Ind.
E. Hiserodt, *M. M*..........Urbana, Ill.
St. Louis Div.: I. H. Wilson, *Supt*.....Indnpls, Ind.
John King, *M. M*..........Indianapolis, Ind.
Ohio Div.: *Supt*.....Sandusky, O.
Jos. S. Porter, *M. M*..........Sandusky, O.
Indiana, Illinois & Iowa R. R. 42 miles.
F. M. Drake, *Gen. Man*..........Dwight, Ill.
J. P. Shouts, *Supt*..........Dwight, Ill.
Ind'p'lis & St. Louis R. R. 266 m. 56 lo. 2,276 c.
C. C. Gale, *Gen. Supt*..........Indianapolis, Ind.
J. L. Yale, *Pur. Agt*..........Cleveland, O.
T. W. Ransom, *M. M. & C. B*.....Mattoon, Ill.
Indianapolis & Vincennes R. R. (*See Penna. Co.*)
Intercolonial Ry. 4-8½ g. 846 m. 111 lo. 3,223 cars.
David Pottinger, *Chief Supt*.....Moncton, N. B.
T. V. Cooke, *Gen. Storekeeper*..Moncton, N. B.
H. A. Whitney, *Mech Supt*......Moncton, N. B.
Ewd. Shaffer, *M. C. B*.......... Moncton, N. B.
Monc. Div.: James E. Price, *Supt*.Moncton, N. B.
Hal. & St. J. Div.: Jas. Coleman, *Supt*..Truro, N. B.
No'n Div.: M. Busby, *Supt*......Cambellton, N. B.
Levis Div.: M. McDonald, *Supt*.Rivière du Loup, Q.
International Ry. 4-8½ g. 69 m. 2 lo. 12 cars.
D. E. McFee, *Supt*..........Sherbrooke, Que.
International & Gt. N'n R. R. (*See St. L., I. M. & S.*)
Iron Mountain & Helena R. R. 4-8½ g. 27 m. 2 lo. 11 c.
Wm. Bailey, *Pres. & Gen. Man*... Helena, Ark.
D. Stillinger, *Supt*..........Helena, Ark.
F. M. Green, *Pur. Agt*..........Helena, Ark.
Wm. Summers, *M. C. B*..........Helena, Ark.
Ithaca, Auburn & Western R. R. 4-8½ g. 38 m.
Fred T. Peet, *Supt*..........Auburn, N. Y.
Ira Dunning, *M. M*..........Auburn, N. Y.

J

Jacksonville So.-E'n R. R. 4-8½ g. 54 m. 5 lo. 68 c
E. S. Greenleaf, *Supt*..........Jacksonville, Ill.
Ira Petrie, *M. M*..........Jacksonville, Ill.
Jacksonv., Pensacola & Mob. (*See Fla. Cent. & W.*)
Jamesville & Washington. 4-8½ g. 22 m. 3 lo. 24 c.
A. Fisher, *Manager*..........Dymond City, N. C.
J. E. Lordley, *M. M. & C. B*..Dymond City, N. C.
Jeffersonv'l, Madison & Indpls. R. R. (*See Pa. Co.*)
Jersey City & Albany R. R. 4-8½ g. 38 m.
J. W. McCulloh, *Manager*...Jersey City, N. J.
Junction & Breakwater; Breakwater & Frankford; and Worcester R. Rs. 4-8½ g. 101 m. 6 l. 133 c.
J. & B. Rd.: Thos. Groome, *Supt*.... Lewes, Del.
Geo. Messick, *M. M*..........Lewes, Del.
W. H. Virden, *M. C. B*..........Lewes, Del.
B. & F. and W. Rds.: J. L. Mapes, *St*. Berlin, Md.

K

Kansas Central R. R. (*See Union Pacific.*)
Kansas City, Lawrence & So. Kansas.
C. C. Wheeler, *Gen. Man*..... Topeka, Kan.
J. L. Barnes, *Supt*..........Lawrence, Kan.
T. D. Volk, *M. M*..........Ottawa, Kan.
Kansas City, Fort Scott & Gulf R. R. 4-8½ g.
Geo. H. Nettleton, *Gen. Man*..Kansas City, Mo.
L. W. Towne, *Gen. Supt*..... Kansas City, Mo.
H. P. Jacques, *Pur. Agt*.. .. Kansas City, Mo.
J. L. Barnes, *Supt*..........Kansas City, Mo.
J. S. McCrum, *M. M*..........Kansas City, Mo.
A. N. Montier, *M. C. B*..........Kansas City, Mo.
Kansas City, St. Joseph & Council Bluffs; and St. Jo. & Des Moines R. Rs. 4-8½ g. 368m. 38 lo. 1,148 cars.
J. F. Barnard, *Gen. Supt. & P. A*.St. Joseph, Mo.
F. A. Chase, *M. M*.......... St. Joseph, Mo.
Thos. Aylesbury, *M. C. B*...... St. Joseph, Mo.
Kendall & Eldred R. R. (*See Olean, B. & W.*)
Kent Co.; Sm. & Del. Bay Rds. 4-8½ g. 50 m. 2 lo. 13 c.
Fred Gerker, *Gen. Man*.......Chestertown, Md.
Kentucky Central R. R. 5 g. 148 m. 19 lo. 371 cars.
J. H. Setchel, *Supt*..........Covington, Ky.
F. Allingham, *M. M*..........Covington, Ky.
J. L. Hackathorn, *M. C. B*.....Covington, Ky.
Kentucky & South Atlantic Ry. 3 g. 23 m. 3 lo. 52 c.
Geo. B. Harper, *Supt. & P. A*..Mt. Sterling, Ky.
S. P. Hatfield, *M. M*..........Mt. Sterling, Ky.
Kinzua R. R. (*See Olean, B. & W.*)
Kingston & Pembroke Ry. 4-8½ g. 65 m. 4 lo. 76 c.
B. W. Folger, *Supt*..........Kingston, Ont.
Wm. Harty, *Pur. Agt*..........Kingston, Ont.
Geo. Becker, *M. M*..........Kingston, Ont.
Knox & Lincoln R. R. 4-8½ g. 49 m. 5 lo. 95 cars.
C. A. Coombs, *Supt*..........Bath, Me.
Wm. A. Field, *M. M*..........Bath, Me.
C. L. Turner, *M. C. B*..........Bath, Me.
Knoxville & Augusta R. R. 4-6 g. 16 m. 2 lo. 34 cars.
J. M. Hood, *Supt*..........Marysville, Tenn.
M. R. Hood, *Pur. Agt*..........Marysville, Tenn.

L

Lake Erie & Western Ry. 4-8½ g. 362 m. 35 l. 1,526 c.
E. H. Waldron, *Gen. Man*......La Fayette, Ind.
E. H. Andress, *Pur. Agt*.......La Fayette, Ind.
H. L. Cooper, *Supt. of Equipment*....Lima, O.
Sandusky Div.: D. S. Hill, *Supt*......Fremont, O.
Bloom. Div.: *Supt*...La Fayette, Ind.
Lake Shore & Michigan So'n Ry.
4-8½ g. 1,243 m. 537 lo. 16,018 cars.
John Newell, *Gen. Man*..........Chicago, Ill.
P. P. Wright, *Gen. Supt*..........Cleveland, O.
A. C. Armstrong, *Pur. Agt*..........Cleveland, O.
James Sedgley, *Gen. M. M*..........Cleveland, O.
John Kirby, *Gen. M. C. B*..........Cleveland, O.
Buffalo Div.: C. B. Couch, *Supt*.....Cleveland, O.
J. S. Graham, *M. M*..........Buffalo, N. Y.
A. C. Robson, *M. C. B*..........Buffalo, N. Y.
Frank. Div.: G. H. McIntire, *Supt*. Stoneboro, Pa.
Erie Div.: C. B. Couch, *Supt*..........Cleveland, O.
L. O. Gassett, *M. M*..........Cleveland, O.
J. Withycombe, *M. C. B*..........Cleveland, O.
Toledo Div.: Thos. Flesher, Jr., *Supt*.Cleveland, O.
J. M. Sanborn, *M. M*..........Norwalk, O.
W. O. Smith, *M. C. B*..........Norwalk, O.
Mich. Div.: J. E. Curtis, *Supt*..........Toledo, O.
Det. Div.: T. J. Charlesworth, *Supt*.Detroit, Mich.
Lansing Div.: W. H. Caniff, *Supt*..Lansing, Mich.
Western Div.: J. H. Parsons, *Supt*... Chicago, Ill.
G. W. Stevens, *M. M.* (M. S. Divs.) Elkhart, Ind.
Frank O. Bray, *M. C. B*..........Adrian, Mich.
Lebanon Springs R. R. 4-8½ g.
W. C. Alstyne, *Manager*.......... Albany, N. Y.
J. K. Hotaling, *Pur. Agt*..........Albany, N. Y.
Geo. Tefft, *M. M*..........Chatham, N. Y.
Lehigh Valley R. R. 4-8½ g. 545 m. 321 lo. 33,817 c.
Robt. H. Sayre, *Gen. Supt*......Bethlehem, Pa.
H. S. Goodwin, *Asst. Gen. Supt*.Bethlehem, Pa.
L. Chamberlain, *Pur. Agt*.... Philadelphia, Pa.
John S. Lentz, *M. C. B*..........Packerton, Pa.
N. J. Div.: H. E. Packer, *Supt*..New York, N. Y.
John I. Kinsey, *M. M*..........So. Easton, Pa.
Coal Rds.: J. I. Blakeslee, *Supt*.Mauch Chunk, Pa.
P. Hofecker, *M. M*..........Weatherly, Pa.
John Campbell, *M. M*..........Delano, Pa.
B. M. Div.: A. G. Brodhead, *S*..Mauch Chunk, Pa.
D. Clark, *M. M*..........Hazleton, Pa.
Wy. Div.: A. Mitchell, *S. & M. M*. Wilkesbarre, Pa.
Pa. & N. Y.; and Geneva, Ithaca & Sayre R. Rs.
Wm. Stevenson, *Supt*..........Sayre, Pa.
J. N. Weaver, *M. M*..........Waverley, Pa.
Ligonier Valley R. R. 3 g. 11 m. 2 lo. 22 cars.
Thos. A. Mellon, *Gen. Manager*.. Pittsburg, Pa.
Geo. Lenft, *Supt. & P. Agt*..........Latrobe, Pa.
Little Rock, Miss. River & Texas Ry.
4-8½ g. 160 m. 12 lo. 200 cars.
J. A. Woodson, *G. S. & P. A*. Little Rock, Ark.
F. Hufsmith, *M. M. & C. B*. Arkansas City, Ark.
Little Rock & Fort Smith. 4-8½ g. 168 m. 12 lo. 353 c.
T. Hartman, *Gen. Supt*..... ..Little Rock, Ark.
James Eblin, *M. M*..........Argenta, Ark.
James Malone, *M. C. B*..........Argenta, Ark.
Long Island R. R. 4-8½ g. 325 m. 79 lo. 740 cars.
I. D. Barton, *Supt*..... .Long Island City, N. Y
Benj. Norton, *Pur. Agt*..Long Island City, N. Y
C. A. Thompson, *M. M. & C. B*. do.
Louisville, New Albany & Chicago Ry.
4-8½ g. 380 miles 33 lo. 2,800 cars.
John MacLeod, *Gen. Supt*......Louisville, Ky.
H. O. Nourse, *Pur. Agt*..........Louisville, Ky.
Josiah Bettis, *M. M. & C. B*...New Albany, Ind.
Louis., Evans. & St. L. Ry. 4-8½ g. 254 m. 24 lo. 691 c.
Webster Snyder, *Gen. Man*......Louisville, Ky.
R. G. Butler, *Gen. Supt*..........Louisville, Ky.
C. F. Martin, *Pur. Agt*..........Louisville, Ky.
F. M. Mast, *M. M*..........Evansville, Ind.
Louisville & Nashville R. R.
5 g. 2,072 m. 316 lo. 6,131 cars.
Fred. de Funiak, *Gen Man*......Louisville, Ky.
G. C. Breed, *A. Gen. Man. & Pur. Agt*. do.
D. W. C. Rowland, *Gen. Supt. Trans*. do.
Reuben Wells, *Supt. Mach*..... Louisville, Ky.
Louisv. Divs.; and Louisv., Cin. & Lex. Ry. (Cin. Div.)
J. G. Metcalf, *Supt*..........Louisville, Ky.
P. Leeds, *M. M.* (Lo. Div.)...... Louisville, Ky.
J. W. Luttrell, *M. M.* (Cin. Div.) Louisville, Ky.
W. P. Pike, *M. M.* (2d & C. Div.).Bowling Green, Ky.
Nash. & D. Div.: J. Geddes, *Supt*.Nashville, Tenn.
W. H. Thomas, *M. M*..........Nashville, Tenn.
S. & N. A. Div.: E. Marsh, *Supt*.Birmingham, Ala.
C. W. White, *M. M*..........Birmingham, Ala.
Mob. & M.; N. Div. Pens. & Sel.; Sl. & Mont. R. Rs.:
M. S. Belknap, *Supt*..........Montgomery, Ala.
J. N. Hall, *M. M.* (Mont. Shops). Montgomery, Ala.
N. O. Div.: J. T. Harrihan, *Supt*.New Orleans, La.
Wm. Adair, *M. M*..........Mobile, Ala.
Memp. Div.: W. Colcamp, *Supt*. Memphis, Tenn.
J. V. Slusser, *M. M*..........Memphis, Tenn.
St. L. Div.: J. Montgomery, *Supt*. Evansville, Ind.
Thos. Walsh, *M. M*..........Mt. Vernon, Ill.
Pensacola and So. Div. Pens. & Selma Rds.:
R. B. Small, *Supt*..........Pensacola, Fla.
Louisville & Wadley R. R. 5 g. 10 m.
J. H. Wilkins, *Pr. & Supt*.......Louisville, Ga.

M

Maine Central R. R. 4-8½ g. 355 m. 58 lo. 1,335 c.
Payson Tucker, *Supt*..........Portland, Me.
Ira K. Russell, *For. Mach. Sh*.. Waterville, Me.
C. H. Kenison, *For. Car Sh*..........Augusta, Me.
Manchester & Keene R. R. (*See B. L. & C.*)
B. F. George, *Asst. Supt*..........Keene, N. H.
Manhattan Ry. 4-8½ g. 32 m. 203 lo. 596 pass. c.
Frank K. Hain, *Gen. Man*.....New York, N. Y.
James Tobin, *Pur. Agt*..........New York, N. Y.
C. L. Green, *Supt*..........New York, N. Y.
T. W. Peeples, *M. M*..........New York, N. Y.
H. A. Webster, *M. C. B*..........New York, N. Y.
Marietta & Cin. R. R. 4-8½ g. 312 m. 65 lo. 1,422 c.
Jas. H. Stewart, *Supt*.......... Cincinnati, O.
Edw. Evans, *M. M*..........Chillicothe, O.
Marietta & North Georgia R. R. 3 g. 24 m. 1 lo. 5 c.
J. B. Glover, *Supt & P. Agt*.. ...Marietta, Ga.
E. A. Withers, *M. M*..........Marietta, Ga.
Marquette, Houghton & Ontonagon R. R.
4-8½ g 87 m. 30 lo. 2,074 cars.
Samuel Schoch, *Gen. Man*.....Marquette, Mich.
R. M. McCauley, *Pur. Agt*....Marquette, Mich.
W. H. Williams, *M. M*..........Marquette, Mich.
H. D. Lyons, *M. C. B*..........Marquette, Mich.
Massachusetts Central R. R. 4-8½ g. 48 m.
N. C. Munson, *Gen. Man*..........Boston, Mass.
E. G. Allen, *Supt. & P. A*..........Boston, Mass.
S. H. Munson, *Supt. M. P*...So. Sudbury, Mass.
McKean & Buffalo R. R. 4-8½ g. 22 m. 2 lo. 8 cars.
S. G. Godden, *Supt*..........Smethport, Pa.
Alex. White, *Pur. Agt*..........Smethport, Pa.
Memphis & Charleston R. R. (*See E. Tenn. Va. & Ga.*)
Memphis & Lit. Rock R. R. 5 g. 135 m. 14 lo. 272 c.
E. K. Sibley, *G. Man. & P. A*..Little Rock, Ark.
Wm. E. Smith, *Supt*.......... Memphis, Tenn.
Thos. Rennell, *M. M*..........Argenta, Ark.
P. Twitchell, *M. C. B*..........Argenta, Ark.
Mexican Central Ry.
Rudolph Fink, *Gen. Man*....... City of Mexico.
J. H. Garner, *Supt*..........City of Mexico.
Howard Hinckley, *Pur. Agt*. .. Boston, Mass.
F. W. Johnson, *M. M*..........City of Mexico.
J. H. O'Brien, *M. C. B*..........City of Mexico.
Mexican National Ry. (*See Tex.-Mex.*)
Michigan Cen. R. R. 4-8½ g. 958 m. 233 lo. 6,552 c.
H. B. Ledyard, *Gen. Man*..........Detroit, Mich.
E. C. Brown, *Asst. Gen. Supt*....Jackson, Mich.
Allan Bourn, *Pur. Agt*..........Detroit, Mich.
S. H. Edgerly, *Gen. M. M*..........Jackson, Mich.
Robert Miller, *Gen. M. C. B*. ...Detroit, Mich.
East. Div.: D. S. Sutherland, *Supt*.Detroit, Mich.
Bay City, Saginaw & Mackinaw Divisions.:
W. A. Vaughan, *Supt*..........Bay City, Mich.
R. P. Baillie, *M. M*..........Bay City, Mich.
Main Line: Gr. Rap.; So. Bend; and So. Hav. Divs.:
C. B. Bush, *Supt*..........Jackson, Mich.
W'n Divs.: R. H. L'Hommedieu, *Supt*.Chicago, Ill.
Middleburg & Schoharie; and
Schoharie Valley R. Rs. 4-8½ g. 10 m. 2 lo. 4 cars
S. S. Danforth, *Gen. Supt*... Middleburg, N. Y.
Midland of Canada. 4-8½ g. 143 m. 12 lo. 503 cars.
Geo. A. Cox, *Gen. Man*.....Peterborough, Ont.
W. B. Ferguson, *Gen. Supt*.Peterborough, Ont.
C. H. Crofts, *Storekeeper*...Peterborough, Ont.
Wm. Marling, *Mech. Supt*.......Port Hope, Ont.
Edward Douglas, *M. C. B*......Port Hope, Ont.
Wm. Polson, *M. M.* (G. J. Ry.)...Belleville, Ont.
Victoria Div.: F. B. Polson, *M. M*...Lindsay, Ont.
H. H. Harry, *M. C. B*..........Lindsay, Ont.
Toronto & Nipissing Div. 3-6 g. 105 m. 12 lo. 211 c.
J. Haggas, *M. M*.......... Uxbridge, Ont.
Chas. E. Caron, *M. C. B*.......Uxbridge, Ont.
Midland No. Car. Ry. 4-8½ g. 95 m. 9 lo. 54 cars.
J. W. Andrews, *Gen. Man*..... Newbern, N. C.
Jno. P. Caddagan, *Pur. Agt*....Newbern, N. C.
J. W. Andrews, *Supt*..........Goldsboro, N. C.
B. Manly, *Supt. of Mach*..........Newbern, N. C.
Milwaukee, Lake Shore & Western Ry.
4-8½ g. 250 m. 28 lo. 809 cars.
H. G. H. Reed, *Gen. Man. & P. Agt*. Milwaukee, Wis.
J. Donahue, *Supt*..........Milwaukee, Wis.
Chas. S. Hayden, *Asst. Supt*...Manitowoc, Wis.
David B. Curtis, *Asst. Supt*.... Oshkosh, Wis.
John Hickey, *M. M*..........Manitowoc, Wis.
Milwaukee & Northern.
C. F. Dutton, *Gen. Supt*.......Milwaukee, Wis.
Mineral Range R. R. 3 g. 13 m. 4 lo. 42 cars.
Chas. E. Holland, *Pr. & Supt*...Hancock, Mich.
W. H. Carr, *Pur. Agt*..........Hancock, Mich.
T. J. Shellhorn, *M. M*..........Hancock, Mich.
C. Angie, *M. C. B*..........Hancock, Mich.
Minneapolis, Lyndale & Minnetonka Ry.
3 g. 20 m. 2 lo. 2 motors 39 cars.
Wm. McCrory, *Supt. & Pur. Agt*., and
R. Curtis, *M. M*..........Minneapolis, Minn.
Minneapolis & St. L. Ry. 4-8½ g. 506 m. 60 lo. 1,850 c.
C. H. Hudson, *Gen. Man*....Minneapolis, Minn.
E. B. Parke, *Pur. Agt*.......Minneapolis, Minn.
E. Ryder, *Supt*..........Minneapolis, Minn.
H. A. Towne, *Supt. of Mach*.Minneapolis, Minn.
Mississippi & Tenn. R. R. 5 g. 101 m. 11 lo. 194 c.
M. Burke, *Supt*..........Memphis, Tenn.
J. C. Ramsey, *M. M*..........Memphis, Tenn.
S. J. Bolton, *M. C. B*..........Memphis, Tenn.
Missouri Pacific Ry. 4-8½ g. 2,132 m. 293 lo. 8,035 c.
A. A. Talmage, *Gen. Man*..........St. Louis, Mo.
A. W. Dickinson, *Asst. Gen. Supt*.St. Louis, Mo.
R. B. Lyle, *Pur. Agt*..........St. Louis, Mo.
John Hewitt, *Supt. Mach*..........St. Louis, Mo.
John Hodge, *Supt. Car Dep*.......St. Louis, Mo.

Main Line. Warder Cumming, Supt..Sedalia, Mo.
C. L. Dunham, Supt. W'n Kansas City, Mo
Le Roy Bartlett, M. M. ....St. Louis, Mo.
Geo. Walshe, M. M. ....Sedalia, Mo.
Ks. & Tex. Div., J. M. Eddy, Supt ...Sedalia, Mo.
J. C. Barber, Asst Supt. Car Dep.Sedalia, Mo.
Wm. T. Small, M. M. ....Parsons, Kan.
Dallas, Ex., L. L. Keller, Supt.....Dallas, Tex.
Cen. Br. Div., W. W. Fagan, Supt. Atchison, Kan.
H. V. Faries, M. M. ....Atchison, Kan.
S. Irwin, Asst. Supt. Car Dep..Atchison, Kan
Mobile & Ala. Grand Trunk R. R. 5 g. 59 m. 2 lo. 23 c.
Wm. H. Pratt, Trustee ....Mobile, Ala.
Mobile & Girard R. R. 5 g. 84 m. 5 lo. 80 cars.
W. L. Clark, Gen Supt ....Columbus, Ga.
J. C. Albrecht, M. M. ....Columbus, Ga.
A. J. Nix, M. C. B. ....Columbus, Ga.
Mobile & Ohio R. R. 5 g. 528 m. 75 lo. 1,180 cars.
A. L. Rives, V. Pr. & Gen. Man....Mobile, Ala.
R. H. Briggs, Gen. M. M. ....Whistler, Ala.
J. T. Booth, M. C. B. ....Whistler, Ala.
So'n Div., I. G. Motley, Supt....Mobile, Ala.
John Fitzgerald, M. M. ....Macon, Miss.
No'n Div.: E. S. Horsford, Supt. Jackson, Tenn.
M. T. Carson, M. M. ....Jackson, Tenn.
Mobile & Spring Hill R. R. 5 g. 8 m. 10 lo. 90 cars.
F. Ingate, Supt ....Mobile, Ala.
Mont Alto R. R. 4-9 g. 21 m. 2 lo. 3 cars.
G. B. Weistling, Supt. & P. A....Mont Alto, Pa.
Montpelier & Wells Riv. R. R. 4-8½ g. 38 m. 3 lo. 76c.
Supt ....Montpelier, Vt.
Morgan's Louisiana & Tex. R. R. 4-8½ g. 165 m.
G. Pandeley, Supt ....New Orleans, La.
C. Trumpy, Pur. Agt. ....New Orleans, La.
N. Tilton, M. M. ....Algiers, La.
Wm. O'Brien, M. C. B. ....Algiers, La.
Muncy Creek Ry. 4-8½ g. 10 m.
Benj. G. Welch, Rec. & P. Agt. Hughesville, Pa.
J. V. Chamberlain, Supt. & M. M. do.

N

Nashville, Chattanooga & St. Louis R'y.,
5 g. 508 miles 87 lo. 1,521 cars.
F. de Funiak, Gen. Man. ....Louisville, Ky.
J. W. Thomas, G. Supt. & P. Agt. Nashville, Tenn.
M. J. C. Wrenne, Supt....Nashville, Tenn.
James Cullen, M. M. ....Nashville, Tenn.
J. G. Sawyer, M. C. B. ....Nashville, Tenn.
Natchez, Jackson & Col. R. R. 3-6 g. 60 m. 4 lo. 32 c.
Belton Mickel, Supt....Natchez, Miss.
Naugatuck R. R., 4-8½ g. 61 miles, 12 lo. 334 cars.
Geo. W. Beach, Supt....Waterbury, Ct.
Henry Hanford, M. M. ....Bridgeport, Ct.
Geo. W. Gray, M. C. B. ....Bridgeport, Ct.
Nevada Central R. R. (See Union Pac.)
Nevada County N. G. R. R. 3 g. 23 m. 3 lo. 46 cars.
John F. Kidder, Supt....Grass Valley, Cal.
Jas. McCormick, M. M. & C. B. Grass Valley, Cal.
New Brunswick Ry. 4-8½ g. 194 m. 12 lo. 266 cars.
E. R. Burpee, Supt....Gibson, N. B.
Alfred Seely, Pur. Agt....Gibson, N. B.
Jesse Mathews, M. M. ....Gibson, N. B.
T. N. Burpee, M. C. B. ....Gibson, N. B.
New Brunswick & Can. Ry. 4-8½ g. 127 m. 12 lo. 184c.
Henry Osborn, G. M. & P. A. St. Andrew's, N. B.
John Stewart, Supt ....St. Stephen, N. B.
Thos. Armstrong, M. M....St. Andrew's, N. B.
G. Houlton, M. C. B. ....St. Andrew's, N. B.
New Castle & Oil City R. R. 4-9 g. 38 m. 4 lo. 30 cars.
A. Vandiwort, Supt....New Castle, Pa.
New Haven & Derby R. R. 4-8½ g. 13 m. 3 lo. 58 c.
E. S. Quintard, Supt. ....New Haven, Conn.
J. M. Whitlock, M. M. & C. B. New Haven, Conn.
New Haven & No'mpton. 4-8½ g. 135 m. 26 lo. 572 c.
C. A. Goodnow, Supt. ....New Haven, Ct.
C. N. Yeamans, Pur. Agt ....New Haven, Ct.
Henry Fox, M. M. ....New Haven, Ct.
John Sweeny, M. C. B. ....New Haven, Ct.
New Jersey & New York Ry. 6 g. 43 m. 6 lo. 41 c.
J. D. Hasbrouck, Gen. Man Jersey City, N. J.
J. S. Drake, Supt. & M. M. ...Hillsdale, N. J.
L. B. Van Wagonen, M. C. B. ...Hillsdale, N. J.
New Jersey Southern Ry. (See Central, N. J.)
New London Northern R. R. (See Central Ver.)
New Orleans Pacific Ry. 5 g. 85 m. 10 lo. 206 cars.
H. S. Moss, Supt....New Orleans, La.
E. R. Smith, M. M. & C. B....New Orleans, La.
N. Y. Central & Hudson River R.R.
4-8½ g. 962 m. 676 lo. 22,539 cars.
J. M. Toucey, Gen. Supt. ....New York, N. Y.
R. C. Moore, Pur. Agt ....New York, N. Y.
Wm. Buchanan, Supt. M. P. .New York, N. Y.
Amos Gould, Asst. Supt. M. P. New York, N. Y.
L. Garey, Supt. Car Dept.. ..New York, N. Y.
N. Y. & Har. Div.: C. M. Bissell, Supt. do.
P. McQ. Gibson, M. M. ....New York, N. Y.
C. E. Garey, M. C. B. ....Morrisania, N. Y.
Hud. Riv. Div.: C. M. Bissell, Supt. N. York, N. Y.
Peter Smith, M. C. B. ....New York, N. Y.
E'n Div.: Zenas C. Priest, Supt .....Utica, N. Y.
G. B. Van Vorst, M. M....West Albany, N. Y.
D. Hoit, M. C. B. ....West Albany, N. Y.
W'n Div.: Geo. H. Burrows, Supt. Rochester, N. Y.
S. L. White, M. M. ....Syracuse, N. Y.
E. A. Olmstead, M. C. B....E. Buffalo, N. Y.
C. H. Burchard, M. C. B..E. Rochester, N. Y.
Ed. Donaby, M. C. B....Niagara Falls, N. Y.
N. Y. Chic. & St. L. Ry. 4-8½ g. 269 m. 36 lo. 1,063c.
L. Williams, Gen. Man. ....Cleveland, O.
H. L. Morrill, Gen. Supt ....Cleveland, O.
Ross Kells, S. M. P. & M. ....Cleveland, O.
Eastern Div.: Wallace McGrath, Supt....Erie, Pa.
Mid. Div.: C. H. Cory, Supt ....Fostoria, O.
West'n Div.: M. E. Wattles, Supt....Chicago, Ill.
New York City & Northern. 4-8½ g. 52 m. 7 lo. 91 c.
F. S. Gannon, Gen. Supt.....High Bridge, N. Y.
M. McNally, M. of M. ....High Bridge N. Y.
New York, Lake Erie & Western R. R.
4-8½ g. 1,020 m. 544 loco. 24,400 cars.
Robt. Harris, V. Pr. & G. Man. New York, N.Y.
E. S. Bowen, Gen. Supt....New York, N. Y.
J. A. Hardenburg, Pur. Agt..New York, N. Y.
F. M. Wilder, Supt. M. P. & M...Susqueh'a, Pa.
E'n Div.: E. O. Hill, Supt.. ...Jersey City, N. J.
J. H. Vreeland, M. M. ....Jersey City, N. J.
J. N. Mileham, M. C. B.....Jersey City, N. J.
Del. Div.: W. J. Murphy Supt..Port Jervis, N. Y.
J. Van Vechten, M. M. & C. B. Pt. Jervis, N. Y.
Susq. Div.: R. B. Cable, Supt....Elmira, N. Y.
V. Blackburn, M. M. ....Susquehanna, Pa.
D. B. Goodell, M. C. B. ....Elmira, N. Y.
Buf. & R. Divs.: Chas. Neilson, Supt.; and
G. B. Ross, M. M. ....Buffalo, N. Y.
M. Wilder, M. C. B. ....Buffalo, N. Y.
B. & S.-W. Div.: C. A. Brunn, Supt do.
W'n Div.: W. B. Coffin, Supt..Hornellsville, N. Y.
E. H. Griggs, M. M. ....Hornellsville, N. Y.
New York, New Haven & Hartford R. R.
4-8½ g. 203 m. 102 lo. 2,416 cars.
E. M. Reed, V. P. & Gen. Man..New Haven, Ct.
R. N. Dowd, Pur. Agt ....New Haven, Ct.
N. Y. & N. H. Div.: J. T. Moody, Supt. New York.
Shore Div.: W. H. Stevenson, Supt. N. Haven, Ct.
H. Kettendorf, Supt. M. P....New Haven, Ct.
Jas. Denver, M. C. B. ....New Haven, Ct.
Hart. Div.: C. S. Davidson, Supt....Hartford, Ct.
John Henny, Jr., Supt. M. P. & M. C. B.... do.
New York, Ontario & Western Ry.
4-8½ g. 345 m. 79 lo. 1,539 cars.
Jas. E. Childs, Gen. Supt .. Middletown, N. Y.
I. W. Fowler, Pur. Agt....Middletown, N. Y.
Edw. Minshull, M. M. & C. B. Middletown, N. Y.
Mid. Div.: N. R. Hankins, Supt. Middletown, N. Y.
No'n Div.: C. W. Lanpher, Supt....Norwich, N. Y.
New York, Pennsylvania & Ohio R. R.
4-8½ g. 564 m. 215 lo. 7,387 cars.
P. D. Cooper, Gen. Man....Cleveland, Ohio.
J. M. Ferris, Supt. Trans....Cleveland, Ohio.
J. H. Holway, Pur. Agt....Cleveland, Ohio.
Wm. Fuller, Gen. M. M. & C. B...Cleveland, O.
S. V. Smith, Asst. Gen. M. C. B....Kent, Ohio.
E'n Div.: A. L. Dunbar, Supt....Meadville, Pa.
J. A. Cooper, M. M. ....Meadville, Pa.
D. S. Dockstader, M. C. B. ....Meadville, Pa.
J. F. Fosdick, For. Car Rep. Salamanca, N. Y.
W'n Div.: J. W. Alsop, Supt....Galion, O.
Wm Hill, M. M. ....Galion, O.
J. W. Holmes, For. Car Rep. ....Galion, O.
Geo. Wilson, For. Car Rep.... Dayton, Ohio.

Maho'g Div.: N. F. Wood, Asst. Supt. Cleveland, O.
N. Wright, M. M. ....Cleveland, O.
C. N. Thorp, M. C. B. ....Cleveland, O.
New York, Providence & Boston R. R.
4-8½ g. 72 m. 29 lo. 430 cars.
J. B. Gardner, Supt....Providence, R. I.
Giles F. Ward, Pur. Agt....Stonington, Conn.
J. H. Anderson, M. M. & C. B. Providence, R. I.
N. Y., Susquehanna & W'n. 4-9 g. 86 m. 20 lo. 350 c.
H. M. Britton, Gen. M. & P. A. New York, N. Y.
W. C. Ennis, M. M. & C. B...Wortendyke, N. J.
New York, West Shore & Buffalo Ry.
Chas. Paine, Gen. Man. ....New York, N. Y.
Howard Fry, Supt. M. P. ....New York, N. Y.
New York, Woodhaven & Rockaway R. R.
4-8½ g. 26 m. 8 lo. 101 cars.
J. M. Lunt, Supt. & P. Agt..Hunter's Pt., L. I.
W. B. Turner, M. M. ....Hunter's Point, L. I.
N. Y. & Greenwood Lake Ry. 4-8½ g. 42 m. 8 lo. 53 c.
J. H. Tinney, Acting Supt....Jersey City, N. J.
J. A. Hardenburg, Pur. Agt..Jersey City, N. J.
G. A. Hill, M. M. ....Pompton, N. J.
N. Y. & Manhattan Beach Ry. 3 g. 23 m. 12 lo. 128 c.
D. C. Corbin, Man. Dir....New York, N. Y.
O. Fairhurst, M. M. ....Greenpoint, L. I.
New York & New England R. R.
4-8½ g. 463 m. 127 lo. 3,326 cars.
S. M. Felton, Jr., Gen. Man....Boston, Mass.
W. W. McKim, Pur. Agt ....Boston, Mass.
A. K. Mansfield, Supt. M. P....Boston, Mass.
M. C. B. ....Norwood, Mass.
Nor. Div.: P. St. M. Andrews, Supt...Norwich, Ct.
Richard Colburn, M. M. ....Norwich, Ct.
Prov. Div.: L. W. Palmer, Supt..Providence, R. I.
Hfd. Div.: T. W. Kennan, Supt....Hartford, Ct.
E. M. Humstone, M. M. ....Hartford, Ct.
Newburg, Dutchess & Conn. R. R. 4-8½ g. 58 miles.
C. L. Kimball, Gen. Supt....Mattewan, N. Y.
W. G. Van Buskirk, M. M. & C. B. do
Norfolk & Western R. R. 5 g. 428 m. 82 lo. 1,220 c.
Henry Fink, 2d V. Pr. & Gen. Man. Lynchb'g, Va.
W. C. De Armond, Pur. Agt...Philadelphia, Pa.
C. Blackwell, Supt. M. P. ....Roanoke, Va.
Va. & Tenn. Div.: F. Sterk, M. M. Lynchburg, Va.
Frank Huger, Supt ....Lynchburg, Va.
W. A. Morgan, M. C. B. ....Lynchburg, Va.
Nor. & Pt. Div.: N. M. Osborne, Supt.,
J. T. Robinett, M. M. & C. B. Petersburg, Va.
North-Eastern R. R. of Ga. 5 g. 40 m. 2 lo. 18 cars.
H. R. Bernard, Supt ....Athens, Ga.
Jno. J. Longest, M. C. B. ....Athens, Ga.
North-Eastern R. R. (S. C.) (See Wil. & Wel.
North Pacific Coast R. R. 3 g. 80 m. 12 lo. 316 cars.
David Nye, Gen. Supt....San Rafael, Cal.
W. F. Russell, Pur. Agt ....San Francisco, Cal.
J. Fowler, M. M. ....Sancelito Cal.
North Shore
A. Davis, Gen. Man....Montreal, Can.
Northern (N. H.), and Concord & Claremont Rys.
4-8½ g. 173 m. 25 lo. 569 cars.
Geo. E. Todd, Supt ....Concord, N. H.
Ed. Studley, M. M. & C. B. & Pur. Agt do.
Northern (N. J.) R. R. (See N. Y., L. E. & W'n.)
Northern Central Ry. (See Penna. (R R.)
North'n Pacific R. R. 4-8½ g. 1,193 m. 104 lo. 3,089 c.
Herman Haupt, Gen. Man.... St. Paul, Minn.
John H. Ames, Pur. Agt ....St. Paul, Minn.
Geo. W. Cross, Supt. Trans ....St. Paul Minn.
Geo. W. Cushing, Supt. M. P. & M. St. Paul, Minn.
W. J. Brokaw, M. M. ....Forsyth, Mon.
St. P. & Minn. Divs.: B. McHugh, Supt., do.
H. J. Small, Supt. Mach....Brainerd, Minn.
Dakota Div.: C. T. Hobart, Supt....Fargo, Dak.
A. Rupert, M. M. ....Fargo, Dak.
Mo. Div.: D. R. Taylor, Supt....Mandan, Dak.
E. F. Doran, M. M. ....Mandan, Dak.
Yell'st'e Div.: S. R. Ainslie, Supt. Glendive, Mont.
S. L. Bean, M. M. .... do.
(2) Western Div.: J. W. Sprague, Gen Supt.; and
Otis Sprague, Supt....New Tacoma, W. T.
H. D. Sanborn, Pur. Agt....Portland, Ore.
F. C. Ford, M. M. ....New Tacoma, W. T.
S. Wishart, M. C. B. ....New Tacoma, W. T.
Pend d'Ore Div.: H. W. Fairweather, Supt.; and
J. F. Curtis, M. M. ....Ainsworth, W. T.
Northern & North-W'n Ry. 5-6 & 4-8½ g. 50 lo. 1,033 c.
James Webster, Supt....Toronto, Can.
C. W. Postlethwaite, Pur. Agt....Toronto, Can.
P. Clarke, M. M. ....Toronto, Can.

O

Ogdensburg & Lake Champlain R. R.
4-8½ g. 122 m. 33 lo. 1,160 cars.
A. A. Gaddis, Gen. Man....Malone, N. Y.
Abr. Klohs, Supt. & M. M. ....Malone, N. Y.
Ohio Central R. R. 4-8½ g. 230 m. 30 lo. 3,201 cars.
John E. Martin, Gen. Man ....Toledo, O.
John E. Martin, Gen. Supt....Toledo, O.
W. H. Vandegrift, Supt ....Toledo, O.
F. W. Stewart, Pur. Agt ....Toledo, O.
J. B. Morgan, M. M. & C. B. ....Bucyrus, O.
Ohio Southern. 4-8½ g. 119 m. 19 lo. 623 cars.
D. R. Ennis, Supt....Springfield, O.
H. C. Norton, Pur. Agt....Indianapolis, Ind.
W. B. Warren, M. M. ....Springfield, O.
Ohio & Mississippi Ry. 4-9 g. 615 m. 14 lo. 2,501 cars.
W. W. Peabody, Gen. Supt....Cincinnati, O.
G. E. Atwood, Pur. Agt....Cincinnati, O.
Cin. Div.: C. B. Cole, Supt....Seymour, Ind.
John Thumser, M. M. ....Seymour, Ind.
J. P. Coulter, M. C. B. ....Aurora, Ind.
Arthur Donaldson, M. M....Vincennes, Ind.
St. L. & Sp. Div.: C. M. Stanton, Supt. St. Louis, Mo.
J. W. Stokes, M. M. (Spring. Div.)..Pana, Ill.
Louisv. Div.: C. B. Cole, Supt. .Louisville, Ky.
Oil City & Ridgway R. R. 4-8½ g. 6 m. 1 lo. 43 cars.
A. F. Kent, Gen. Man....Oil City, Pa.
Old Colony R. R. 4-8½ g. 463 m. 110 lo. 2,862 cars.
J. R. Kendrick, Gen. Supt....Boston, Mass.
Main Li. Div.: J. H. French, Supt...Boston, Mass.
R. W. Husted, Pur. Agt....Boston, Mass.
J. K. Taylor, M. M. ....Boston, Mass.
A. Gleason, M. C. B. ....Boston, Mass.
Cape Cod Div.: C. H. Nye, Supt..Hyannis, Mass.
No. Div.: S. A. Webber, Supt....Fitchburg, Mass.
George W. Reynolds, M. M....Taunton, Mass.
Sam. Stevens, M. C. B. ....Taunton, Mass
Olean, Bradford & Warren; Bradford; Kinzua; and
Kendall & Eldred R. Rs. 3 g. 38 m. 9 lo. 222 cars.
J. W. Watson, Gen. Supt....Olean, N. Y.
J. H. Poole, Pur. Agt ....Buffalo, N. Y.
Charles Turner, M. M. & C. B....Olean, N. Y.
Ontario Southern Ry. 4-8½ g. 24 m. 3 lo. 40 c.
S. B. Stuart, Supt....Sodus Point, N. Y.
S. B. Stuart, Pur. Agt....Sodus Point, N. Y.
W. H. Cook, M. C. B. ....Sodus Point, N. Y.
Oregon Ry. & Nav. Co. 4 8-½ g. 225 m. 31 lo. 930 cars.
C. H. Prescott, Manager....Portland, Ore.
J. M. Buckley, Asst. Man. & Act. Supt. do.
J. M. Fillmore, Supt. (R. Div.)... Portland, Ore.
K. Von Oterendorf, Supt. (O. Div.) S. F'cisco, Cal.
J. M. Drake, Pur. Agt....Portland, Ore.
C. C. Hobart, Gen. M. M. ....The Dalles, Ore.
Chas. A. Phipps, M. C. B. ....The Dalles, Ore.
N. G. Div.: Wm. Reed, Man.... ..Portland, Ore.
James Walch, M. M. ....Portland, Ore.
Oregon & California R. R. 4-8½ g. 200 m. 14 lo. 286 c.
R. Koehler, Act. Man....Portland, Ore.
J. Brandt, Gen. Supt....Portland, Ore.
A. Brandt, M. M. ....Portland, Ore.
Owensboro & Nashville R. R. 5 g. 35 m.
W. L. Gade, Gen. Supt ....Owensboro, Ky.
H. M. Gable, M. M. & C. B....Owensboro, Ky.

P

Paducah & Elizabetht'n R.R. 5 g. 186 m. 19 lo. 536 c.
Robert Meek, Gen. Supt ..Elizabethtown, Ky.
W. D. Robb, M. M. & C. B. Elizabethtown, Ky.
Painesville & Youngstown R. R. 3 g. 65 m. 7 lo. 319 c.
E. K. Hyndman, Gen. Man....Pittsburg, Pa.
J. A. Newcome, Supt....Painesville, O.
J. H. Jones, M. M. ....Painesville O.
Panama R. R. 5 g. 58 m. 14 lo. 534 cars.
H. A. Woods, Supt.... Aspinwall, U. S. Col.
E. Z. Penfield, Pur. Agt.... New York, N. Y.
Thomas S. O'Brien, M. M. Aspinwall, U. S. Col.

Parker & Karns City; and
Karns City & Butler R. Rs. 3 g. 27 m. 5 lo. 84 cars.
W. C. Moberly Gen. Supt....Parker City, Pa.
Philip Davies, M. M. ....Parker City, Pa.
Wm. Wolford, M. C. B. ....Parker City, Pa.
Passumpsic R. R. 4-8½ g. 165 m. 28 lo. 105 cars.
E. Raymond, Pres. & Pur. Agt..Boston, Mass.
H. E. Folsom, Supt....Lyndonville, Vt.
L. L. Brigham, M. M. ....Lyndonville, Vt.
L. F. Woodard, M. C. B. ....Lyndonville, Vt.
Peach Bottom R. R. 3 g. 55 m. 6 lo. 52 cars.
Samuel Dickey, Gen. Man....York, Pa.
G. R. Dickey, Supt. & Pur. Agt....York, Pa.
E. H. Williams, M. C. B. ....York, Pa.
E. Div.: S. Dickey, Supt....Oxford, Pa.
W. P. Kirk, M. M. ....Oxford, Pa.
Pennsylvania Co.'s (9) Roads.
4-9 g. 2,838 m. 817 lo. 29,432 cars.
Wm. Mullins, Gen. Pur. Agt....Pittsburg, Pa.
Joseph Wood, Supt. M. P....Fort Wayne, Ind.
(1) Clev. & Pittsb'g R. R. 4-9 g. 224 m. 97 lo. 3,336 c.
R. V. Smith, Asst. Gen. Man....Cleveland, O.
Philip Bruner, Supt ....Wellsville, O.
W. F. Beardsley, Mast. of Mach. Cleveland, O.
(2 & 3) Erie & Ashtabula Rds. 178 m. 29 lo. 1,340 c.
John M. Kimball, Supt....Youngstown, O.
J. A. Wood, For. Shops....Erie, Pa.
(4) Indianap. & Vincennes Rd. 117 m. 11 lo. 303 cars.
Jas. J. Turner, Supt....Indianapolis, Ind.
M. M.
(5) Jeffersonville, Madison & Indianapolis R. R.
4-9 g. 217 m. 47 lo. 784 cars.
E. W. McKenna, Supt....Louisville, Ky.
Wm. Swanston, M. M....Jeffersonville, Ind.
Edw. Austin, M. C. B. ....Jeffersonville, Ind.
(6) Northwestern Ohio Ry. 4-9 g. 79 m.
J. S. Morris, Supt....Toledo, O.
(7) Pittsburg, Ft. Wayne & Chicago Ry.
4-9 g. 468 m. 278 lo. 6,782 cars.
E'n Div.: A. B. Starr, Supt....Allegheny, Pa.
Geo. J. Parkin, M. M. ....Allegheny, Pa.
W'n Div.: C. D. Law, Supt....Ft. Wayne, Ind.
F. D. Casanave, M. M. ....Ft. Wayne, Ind.
(8) Pittsburg, Cincinnati & St. Louis Ry.
4-9 g. 1,172 m. 336 lo. 6,482 cars.
Jas. McCrea, Gen. Supt....Columbus, O.
R. H. Soule, Supt M. P. & M. ..Columbus, O.
P. & Col. Div: E. B. Taylor, Supt Dennison, O.
C. B. Street, M. M. ....Dennison, O.
A. K. Mansfield, M. C. B. ....Steubenville, O.
Robt. Curtis, M. M. ....Columbus, O.
Thos. Chamberlain, M. C. B.... Columbus, O.
C. & M. V. Div.: W. F. Black, Supt. Zanesville, O.
Leroy Kells, M. M. ....Lancaster, O.
Daniel Jewell, M. C. B. ....Lancaster, O.
Li. Mi. Div.: Ralph Peters, Supt....Cincinnati, O.
Leroy Kells, M. M. ....Cincinnati, O.
M. P. Ford, M. C. B. ....Columbus, O.
Ind. Divs.: J. F. Miller, Supt.... Richmond, Ind.
Geo. H. Prescott, M. M. ....Logansport, Ind.
Chas. H. Starr, M. C. B. ....Logansport, Ind.
M. J. Rogers, M. M. ....Indianapolis, Ind.
Chi. Div.: C. C. F. Bent, Supt..Logansport, Ind.
(9) Terre Haute & Indianapolis R. R.
4-9 g. 374 m. 83 lo. 2,868 cars.
Joseph Hill, Gen. Supt....St. Louis, Mo.
C. R. Peddle, P. Agt. & Supt. M. P. & M.; and
E. D. Carter, M. C. B. ....Terre Haute, Ind.
Clinton Idler, M. M. ....Indianapolis, Ind.
Chas. Butler, M. M. ....Effingham, Ill.
A. W. Quakenbush, M. M...Logansport, Ind.
Pennsylvania R. R. Co.'s Roads. (7 Gen. Divs.)
4-9 g. 2,704 m. 1,271 loco. 51,894 cars.
Frank Thomson, Gen. Man....Philadelphia, Pa.
Enoch Lewis, Pur. Agt....Philadelphia, Pa.
John Reilly, Supt. Trans....Philadelphia, Pa.
T. N. Ely, Supt. Mo. Po. (4 Gen. Divs.) Altoona, Pa.
(1) Pennsylvania R. R. Divs.
4-9 g. 1,105 m. 627 lo. 35,583 cars.
Charles E. Pugh, Gen. Supt....Altoona, Pa.
Phila. Div.: S. M. Prevost, Supt. Philadelphia, Pa.
H. D. Garrett, M. M.... W. Philadelphia, Pa.
I. W. Van Houten, M. C. B. ....W. Phila., Pa.
Mid. Div.: H. H. Carter, Supt....Harrisburg, Pa.
E. L. Caum, M. M. ....Harrisburg, Pa.
Samuel W. Myers, M. C. B...Harrisburg, Pa.
Alt'a Div.: Wm. J. Latta, Supt....Altoona, Pa.
G. W. Strattan, M. M. ....Altoona, Pa.
John P. Levan, M. C. B. ....Altoona, Pa.
Pitts. Div.: Robert Pitcairn, Supt....Pittsburg, Pa.
D. O. Shaver, M. M. ....Pittsburg, Pa.
J. G. Stewart, M. C. B. ....Pittsburg, Pa.
W. Pa. Div.: A. P. Kirtland, Supt. Blairsville, Pa.
C. B. Street, M. M. ....Blairsville, Pa.
M. H. Fails, M. C. B. ....Blairsville, Pa.
Fred. Div.: J. B. Hutchinson, Supt....York, Pa.
Tyrone Div.: S. S. Blair, Supt....Tyrone, Pa.
Lew. Div.: Wm. M. Phillips, Supt. Lewistown, Pa.
Bed. Div.: Thos. A. Roberts, Supt...Bedford, Pa.
Monong. Div.: David M. Watt, Supt. Pittsburg, Pa.
Wm. Lininger, M. M. ....Pittsburg, Pa.
(2) United R. Rs of N. J. Divs. 414 m. 257 lo. 4,668 c.
F. Wolcott Jackson, Gen. St. Jersey City, N. J.
N. Y. Div.: Robt. E. Pettit, Supt. Jersey City, N. J.
H. S. Hayward, At. St. M. P. Jersey City, N. J.
David H. Baker, M. C. B...Jersey City, N. J.
L. A. Bosdevex, M. M. ..Jersey City, N. J.
E. F. Bosdevex, M. C. B....Jersey City, N. J.
Belv. Div.: J. A. Anderson, Supt. Lambertv., N. J.
R. McDowell, M. M. ....Lambertville, N. J.
Amboy Div.: J. S. Buckalew, Supt. Camden, N. J.
Thos. Kerr, M. M. ....So. Amboy, N. J.
P. S. Bogart, M. C. B. ....So. Amboy, N. J.
(3) West Jersey R. R. 4-9 g. 163 m. 22 lo. 342 cars
Joseph Crawford, Supt ....Camden, N. J.
W. McAllister, M. M. ....Camden, N. J.
C. C. Williams, M. C. B. ....Camden, N. J.
(4) Phila., Wilm. & Balt. R.R. 212 m. 86 lo. 1,488 c.
H. F. Kenney, Gen. Supt. ....Philadelphia, Pa.
S. A. Hodgman, M. M. ....Wilmington, Del.
Wm. Lundgren, M. C. B. ....Wilmington, Del.
Cen. Div.: L. K. Lodge, Supt.. Philadelphia, Pa.
S. D. Danfield, M. M. & C. B....Chester, Pa.
Del. Div.: I. N. Mills, Supt....Philadelphia, Pa.
(5) Phila. & Erie R. R. Divs.: 376 m. 117 lo. 3,481 c.
R. Neilson, Gen. Supt....Williamsport, Pa.
A. O. Dayton, Supt. Mo. Po..Williamsport, Pa.
E'n. Div.: Thos. Gucker, Supt. Williamsport, Pa.
Sun. H. & W. Div: F. L. Sheppard, Supt.; and
W. F. Beardsley, M. M. ....Sunbury, Pa.
Mid. Div.: E. B. Westfall, Supt....Renova, Pa.
Wm. L. Holman, M. M. ....Renova, Pa.
West'n Div.: J. W. Reynolds, Supt....Erie, Pa.
W. T. Smith, M. M. ....Erie, Pa.
(6) Northern Central Ry. 4-9 g. 326 m. 152 lo. 6,163 c.
A. W. Sumner, Pur. Agt....Baltimore, Md.
Susq., Shamokin, Elmira & Canadaigua Divs.:
Robert Neilson, Gen. Supt...Williamsport, Pa.
A. O. Dayton, Supt. M. P. ...Williamsport, Pa.
Susq. Div.: Thos. Gucker, Supt. Williamsport, Pa.
Sham. Div.: Supt....Sunbury, Pa.
Elm. & Can. Divs.: S. Meade, Supt..Elmira, N. Y.
Jas. Strode, M. M. ....Elmira, N. Y.
J. C. Dyott, M. C. B. ....Elmira, N. Y.
Baltimore Divs. of Northern Central: and
(7) Baltimore & Potomac R. R. 128 m. 29 lo. 356 c.
G. C. Wilkins, Supt....Baltimore, Md.
A. W. Sumner, Pur. Agt....Baltimore, Md.
J. M. Wallis, Supt. Mo. Po....Baltimore, Md.
J. M. Coale, M. M. ....Baltimore, Md.
G. W. Demarest, M. C. B. ....Baltimore, Md.
Penn. Coal Co.'s R. R. 4-3 g. 67 m. 23 eng. 2,871 c.
J. B. Smith, Gen. Supt. ....Dunmore, Pa.
And. Crane, M. M. ....Dunmore, Pa.
Geo. W. Simpson, M. C. B. ....Dunmore, Pa.
Pennsylvania & Erie R. R.—Early Branch.
C. R. Early, Gen. Supt....Ridgeway, Pa.
Pensacola & Perdido R. R. 6 g. 8 m. 5 lo. 73 cars.
B. F. Simmons, Pr. & Supt.... Pensacola, Fla.
H. W. Simmons, Pur. Agt....Pensacola, Fla.
R. G. Nicholl, M. M. & C. B....Pensacola, Fla.
Peoria, Decatur & Evansville Ry.
4-8½ g. 215 m. 12 lo. 725 cars.
G. L. Bradbury, Gen. Man.... Peoria, Ill.
Supt. & Pur. Agt....Peoria, Ill.
P. Reilly, M. M. ....Mattoon, Ill.
Peoria & Farmington R. R. 4-8½ g. 25 m. 2 lo. 25 c.
D. P. Phelps, Gen. Man....Monmouth, Ill.
John F. Wallace, Supt....Farmington, Ill.

Peoria & Pekin Union Ry. 4-8½ g. 20 m. 12 lo. 100 c.
Thos. B. Burnett, Gen. Supt. & P. A. Peoria, Ill.
R. F. Hurd, M. M. & C. B. ....Peoria, Ill.
Perkiomen R. R. 4-8½ gauge 39 miles.
D. B. Clack, Supt....Norristown, Pa.
Petersburg R. R. 4-8½ g. 64 m. 10 lo. 131 cars
R. M. Sully, Gen. Supt....Petersburg, Va.
L. E. Clark, Pur. Agt....Petersburg, Va.
R. B. Andrews, M. M. ....Petersburg, Va.
J. W. Fleming, M. C. B. ....Petersburg, Va.
Phila., Wilmington & Balt. R. R. (See Penna. R. R.)
Phila. & Atlantic City Ry. 3-6 g. 65 m. 11 lo. 134 cars.
F. S. Urie, Supt. & Pur. Agt..Philadelphia, Pa.
J. W. Wright, M. M. ....Camden, N. J.
E. Lippincott, M. C. B. ....Camden, N. J.
Phila. & Reading. 4-8½ g. 869 m. 516 lo. 21,960 cars.
John E. Wootten, Gen. Man..Philadelphia, Pa.
W. S. Wilson, Pur. Agt. ....Philadelphia, Pa.
Geo. Eltz, Supt. Trans....Reading, Pa.
L. B. Paxson, Eng. of Mach....Reading, Pa.
John H. Rankin, M. C. B. ....Reading, Pa.
No. Pa. & B. Brk. Div.: I. A. Sweigard, Supt., and
Jackson Richards, M. M....Philadelphia, Pa.
C. & W. Br.: D. C. Reinhart, Sup. Williamsport, Pa.
W. H. Ellis, M. M. ....Catawissa, Pa.
C. D. Ellis, M. C. B. ....Catawissa, Pa.
Leb. & Tr. Br.: H. W. Tracy, Supt. Pine Grove, Pa.
Coal Br.: J. H. Olhausen, Supt. Mahony Plane, Pa.
R. & C. Br.: A. M. Wilson, Supt...Columbia, Pa.
P. N. & N. Y. Rd.: W. M. Geary, S. Morristown, Pa.
S. & Le. Rd.: E. Dale, Supt....Reading, Pa.
Pittsburg, Bradford & Buffalo Ry. 3 g. 31 m. 4 lo. 79c
J. M. Dickey, Gen. Man ....Foxburg, Pa.
M. Mandeville, Supt....Foxburg, Pa.
Pittsburg, Cincinnati & St. Louis Ry. (See Penna. Co.)
Pittsburg, Ft. Wayne & Chicago Ry. (See Penna. Co.)
Pittsburg Southern Ry. 3 g. 38 m. 4 lo. 64 cars.
Supt. & P. A....Pittsburg, Pa.
W. S. Marshall, M. M. ....Pittsburg, Pa.
E. B. Gosline, M. C. B. ....Pittsburg, Pa.
Pitts. & Castle Shannon R. R. 3-4 g. 9 m. 5 lo. 388 c.
James M. Bailey, Gen. Supt....Pittsburg, Pa.
A. C. Hays, Supt....Pittsburg, Pa.
Holmes Ward, M. M. ....Castle Shannon, Pa.
Wm. E. Long, M. C. B. ....Pittsburg, Pa.
Pitts. & Lake Erie R. R. 4-8¾ g. 70 m. 30 lo. 1,688 c.
W. C. Quincy, Gen. Man....Pittsburg, Pa.
R. W. Jones, Mast. Trans....Pittsburg, Pa.
S. W. Haines, M. M. ....Pittsburg, Pa.
Pittsburg & Western R. R. 3 g. 47 m. 2 lo. 76 cars.
E. K. Hyndman, Gen. Man....Pittsburg, Pa.
C. P. Ford, Pur. Agt. ....Allegheny, Pa.
W. L. Hofecker, M. M. ....Zelienople, Pa.
Port Huron & No.-Western Ry. 3 g. 105 m. 4 lo. 66 c.
H. McMorran, G. Man. & P. A. Port Huron, Mich.
I. R. Wadsworth, Supt.. ...Port Huron, Mich.
Chas. Deifenbaugh, M. M....Port Huron, Mich.
Benj. Hillier, M. C. B. ....Port Huron, Mich.
Port Royal & Augusta Ry. 5 g. 112 m. 13 lo. 235 c.
J. N. Bass, Gen. Supt....Augusta, Ga.
John McCann, M. M. ....Augusta, Ga.
J. H. Milton, M. C. B. ....Augusta, Ga.
Portland & Ogdensburg. 4-8½ g. 114 m. 9 lo. 289 c.
J. Hamilton, Gen. Supt. & P. A..Portland, Me.
Geo. H. Poor, M. M. ....Portland, Me.
W. G. Brewer, M. C. B. ....Portland, Me.
Portland & Rochester R. R. 4-8½ g. 52 m. 7 lo. 230 c.
J. W. Peters, Supt. & Pur. Agt ..Portland, Me.
E. H. C. Tompson, For. of Mach. Portland, Me.
David Dow, For. of Car Repairs Portland, Me.
Potomac, Fred.'g & Pied. R. R. 3 g. 38 m. 2 lo. 32 c.
W. M. Crafton, Supt....Fredericksburg, Va.
Pough., Hart. & Bos. R. R. 4-8½ g. 45 m. 4 lo. 64 c.
J. A. Perkins, Supt.. ....Poughkeepsie, N. Y.
John L. Driscoll, M. M... Poughkeepsie, N. Y.
Prince Edward Island Ry. 3-6 g. 199 m. 17 lo. 280 c.
L. B. Archibald, Supt. & Pur. Agt.;
Jos. Unsworth, M. Supt. & Storekeeper; and
D. M. Fraser, M. C. B.. .Charlottetown, P. E. I.
Prov., Warren & Bristol R. R. 4-8½ g. 19 m. 5 lo. 38 c.
Waterman Stone, Supt.. ....Providence, R. I.
Rufus Smith, M. M. & C. B. ....Bristol, R. I.
Prov. & Springfield R. R. 4-8½ g. 23 m. 3 lo. 83 c.
Wm. Tinkham, Gen. Man....Providence, R. I.
G. T. Richardson, M. M. ....Providence, R. I.
Prov. & Worcester. 4-8½ g. 66 m. 30 lo. 858 c.
W. E. Chamberlain, Supt ....Providence, R. I.
A. Griggs, Supt. L. & C. D....Providence, R. I.
Pullman's Palace Car Co. 472 passenger cars.
A. B. Pullman, 2d V.-Pr. & G. M.. Chicago, Ill.
Geo. F. Brown, Gen. Supt....Chicago, Ill.
Wm. A. Angell, Pur. Agt....Chicago, Ill.
S. W. Bretzfield, Asst. Pur. Agt. New York, N.Y.
A. Rapp, Man. (Chicago Works)...Chicago, Ill.
H. L. Spaulding, Man. (Det Shops). Detroit, Mich.
E. A. Benson, Supt. Shops....St. Louis, Mo.

Q

Quebec Central Ry. 4-8½ g. 139 m. 3 lo. 79 cars.
A. Steele, Supt....Sherbrooke, Que.
R. D. Morkill, Pur. Agt....Sherbrooke, P. Q.
Jas. Seiveright, M. M. ....Sherbrooke, P. Q.
Quebec, Montreal, Ottawa & Occidental Ry.
4-8½ g. 329 miles, 34 loco. 556 cars.
L. A. Senecal, Gen. Supt....Montreal, Can.
W. E. Blumhart, Pur. Agt....Montreal, Can.
A. Davis, Mech. Supt....Montreal, Can.
Quebec & Lake St. John Ry. 4-8½ g. 24 m. 3 lo. 43 c.
J. G. Scott, Manager....Quebec, Can.
Frank Fournier, Supt....St. Raymond, P. Q.
John T. Eames, M. M. ....St. Raymond, P. Q.

R

Raleigh & Augusta Air-Line: Carolina Central;
Raleigh & Gaston R. Rs. 4-8½ g. 436 m. 48 lo. 978 c.
John C. Winder, Gen. Man....Raleigh, N. C.
Raleigh Rds. 4-8½ g. 194 m. 22 lo. 589 cars.
B. R. Harding, Supt. of Mach. Raleigh, N. C.
R. T. Bishop, M. C. B. ....Raleigh, N. C.
Carolina Cen. R.R. 4-8½ g. 242 m. 26 lo. 389 c.
V. Q. Johnson, Gen. Supt..Wilmington, N. C.
C. H. Roberts, Pur. Agt....Wilmington, N. C.
James Maglenn, M. of Mach. Laurinburg, N. C.
S. R. Ethridge, M. C. B. ....Laurinburg, N. C.
Rensselaer & Saratoga R.R. (See Del. & Hud. Can. Co.)
Rhinebeck & Connecticut. 4-8½ g. 42 m. 5 lo. 85 c.
J. H. Jones, Gen. Supt....Rondout, N. Y.
John Dykeman, M. M. ....Rondout, N. Y.
John H. Decker, M. C. B. ....Rondout, N. Y.
Richmond, Fredericksburg & Potomac R. R.
4-8½ g. 83 m. 14 lo. 165 cars.
E. T. D. Myers, Gen. Supt.... Richmond, Va.
T. L. Courtney, Pur. Agt....Richmond, Va.
H. Khun, M. M. ....Richmond, Va.
W. H. Trainham, M. C. B. ....Richmond, Va.
Richmond & Alleghany R.R. 4-9 g. 250 m. 18 lo. 771c.
Gen. Man ....Richmond, Va.
Geo. W. Agee, Supt....Richmond, Va.
J. P. Williams, Pur. Agt ....Richmond, Va.
Geo. D. Harris, M. M. & C. B. ...Richmond, Va.
Richmond & Danville R. R. Co.'s Roads.
1,655 miles 217 loco. 3,616 cars.
T. M. R. Talcott, Gen. Man....Richmond, Va.
J. P. Minetree, Pur. Agt....Richmond, Va.
R. D. Wade, Supt. Mo. Po... ...Richmond, Va.
(1) Rich. & Dan. R. R. 5 g. 764 m. 131 lo. 2,480 cars.
Peyton Randolph, As. G. Man..Richmond, Va.
Rich. & Dan. Div.: 5 g. 255 m. 79 lo. 1,797 c.
Wm. H. Green, Supt....Richmond, Va.
T. W. Gentry, M. M. ....Richmond, Va.
J. B. Vaughan, For. Car Sh.. Richmond, Va.
North Carolina Div. 5 g. 223 m. 22 lo. 268 cars.
A. B. Andrews, Supt....Raleigh, N. C.
W. H. Turrentine, M. M. Comp'y's Shops, N. C.
J. C. Holt, For. Car Sh. Comp'y's Shops, N. C.
Atlanta & Char. Air Line. 5 g. 280 m. 31 lo. 415 c.
Narrow-Gauge Branches. 3 g. 80 m. 5 lo. 37 c.
I. Y. Sage, Supt....Atlanta, Ga.
W. A. Walden, Act. M. M. ....Atlanta, Ga.
Z. T. Smith, For. Car Sh.... Atlanta, Ga.
(2) Charlotte, Col. & Aug. R. R. 5 g. 239 m. 22 lo. 287 c.
G. R. Talcott, Supt ....Columbia, S. C.
J. H. Green, M. M. (2 roads)...Columbia, S. C.
J. H. Perkins, For. Car Sh. .. Columbia, S. C.
(3) Columbia & Greenville R. R. 5 g. 297 m. 22 l. 218 c.
J. W. Fry, Supt....Columbia, S. C.
J. O. Meredith, For. E. & C. Rep.. do.
(4) Virginia Midland Ry. 4-8½ g. 353 m. 41 lo. 631 c.
W. M. S. Dunn, Eng. & Supt. Alexandria, Va.
J. E. Waddey, M. of M. ....Alexandria, Va.
J. T. Nalls, M. C. B. ....Alexandria, Va.

Richmond & Petersburg R.R. 4-8½ g. 25 m. 8 lo. 130 c.
J. R. Kenly, *Supt*...Richmond, Va.
John O'Brien, *M. M*...Richmond, Va.
Rio Grande R. R. 3-6 g. 22 m. 3 lo. 39 cars.
M. J. Gomila, *Rec. & Gen. Man* Brownsville, Tex.
G. W. Rendall, *M. M*...Brownsville, Tex.
M. Markwood, *M. C. B*...Brownsville, Tex.
Rochester & Pittsb'g. R.R. 4-8½ g. 108 m. 11 lo. 612 c.
Geo. E. Merchant, *Gen. Man*...Rochester, N. Y.
J. P. Hovey, *M. M*...Rochester, N. Y.
Rock Island & Mercer County R. R., and
Rock I'd & Peoria Ry. 4-8½ g. 113 m. 12 lo. 357 c.
R. R. Cable, *V.-P. & Gen. Supt*..Rock Island, Ill.
R. I. & P. Ry.: H. B. Ludlow, *Supt. & P. A.* do.
Joseph Elder, *M. M*...Peoria, Ill.
R. I. & M. C. Rd.: B. T. Cable, *Supt*.R'k Island, Ill.
J. Parks, *M. M*...Rock Island, Ill.
Rome (Ga.) R. R. 5 g. 20 m. 2 lo. 13 cars.
Eben Hillyer, *Supt*...Rome, Ga.
O. W. Harbin, *M. M. & C. B*...Rome, Ga.
Rome, Watertown & Ogdensburg R. R.
4-8½ g. 409 m. 51 lo. 1,248 cars.
E. A. Van Horne, *Gen. Supt*...Oswego, N. Y.
Geo. W. B. Cushing, *Pur. Agt*. New York, N. Y.
Geo. H. Haselton, *M. M. & C. B*..Oswego, N. Y.
Rumford Falls & Buckfield R.R. 4-8½ g. 29 m. 2 l. 42 c.
O. Hayford, *Supt*...Canton, Me.
O. Spaulding, *Pur. Agt*...Buckfield, Me.
E. R. Oldham, *M. M*...Buckfield, Me.

S

Sabine & East Texas Ry. 4-8½ g. 25 m. 5 lo. 306 c.
J. B. Morford, *Gen. Supt*...Beaumont, Tex.
R. H. Cousins, *Supt*...Beaumont, Tex.
Sacramento & Placerville R. R. 4-8½ g. 49 m. 3 lo. 68 c.
J. B. Wright, *Supt. & P. A*...Sacramento, Cal.
A. J. Stevens *M. M*...Sacramento, Cal.
Benj. Welch, *M. C. B*...Sacramento, Cal.
Saginaw Bay & Northw'n R. R. 4-8½ g. 20 miles.
E. W. Gerrish, *Supt*...Pinconning, Mich.
F. T. Lillot, *Pur. Agt*...Pinconning, Mich.
And. Miller, *M. M*...Pinconning, Mich.
Saginaw Valley & St. Louis R. R. 4-8½g. 35 m. 4 l. 64 c.
N. W. Merrill, *Supt*...Saginaw, Mich.
Allan Bourn, *Pur. Agt*...Detroit, Mich.
Geo. C. Watrous, *M. M*...Iona, Mich.
San Francisco & No. Pac. 4-8½ g. 112 m. 11 lo. 244 c.
Arthur Hughes, *Gen. Man*..San Francisco, Cal.
H. C. Whiting, *Supt*...Petaluma, Cal.
P. E. Dougherty, *Pur. Agt* San Francisco, Cal.
Ed. Reynolds, *M. M*...Donahue, Cal.
M. C. B...Donahue, Cal.
San Luis Obispo & Santa Maria Val. R. R. 3 g. 11 m.
C. A. Haskin, *Supt. & P. Agt*.San Luis Obispo, Cal.
W. H. Masterman, *M. M*.San Luis Obispo, Cal.
J. M. Vincent, *M. C. B*...San Luis Obispo, Cal.
Savannah, Florida & W'n Ry. 5 g. 422 m. 50 lo. 695 c.
H. S. Haines, *Gen. Man*...Savannah, Ga.
R. G. Fleming, *Supt*...Savannah, Ga.
A. A. Aveilhé, *Pur. Agt*...Savannah, Ga.
James D. Hollister, *M. of Mach*..Savannah, Ga.
Jos. W. Rowell, *For. Car Dept* Savannah, Ga.
Sav., Griffin & No. Ala. R. R. *Op. by Central (Ga.)*.
Schuylkill & Lehigh R. R. 4-8½ g. 43 miles.
Elbridge Dale, *Supt*...Reading, Pa.
Schoharie Valley R. R. *(See Middleburg & Sch.)*
Scioto Valley R. R. 4-8½ g. 131 m. 15 lo. 460 cars.
Geo. Skinner, *Supt*...Columbus, O.
R. Bromley, *M. M. & P. A*...Portsmouth, O.
Seaboard & Roanoke R. R. 4-8½ g. 80 m. 21 lo. 381 c.
E. G. Ghio, *Mast. of Trans*...Portsmouth, Va.
M. M. Pendleton, *S. M. P. & M* Portsmouth, Va.
Shenandoah Valley R. R. 4-8½ g. 143 m. 15 lo. 104 c.
Henry Fink, *Gen. Man*...Lynchburg, Va.
J. H. Sands, *Supt*...Hagerstown, Md.
W. C. De Armond, *Pur. Agt*..Philadelphia, Pa.
Chas. Blackwell, *Supt. of M. P.*.Roanoke, Va.
Jno. McCallister, *M. M*..Shepherdstown, W. Va.
H. Groves, *M. C. B*...Shepherdstown, W. Va.
Shenango & Allegheny R R 4-9½ g. 47 m. 6 lo. 156 c.
J. T. Blair, *G. Supt. & Pur. Agt* Greenville, Pa.
Edw. Richardson, *M. M. & C. B*.Greenville, Pa.
Shepaug R. R. 4-8½ g. 38 m. 3 lo. 27 cars.
Edwin McNeill, *Supt*...Litchfield, Ct.
C. M. Allen, *M. M*...Litchfield, Ct.
Ship Is., Ripley & Ky. R. R. 3 g. 25 m. 2 lo. 23 cars.
C. L. Harris, *Supt. & Pur. Agt*...Ripley, Miss.
W. H. Phelps, *M. M*...Ripley, Miss.
Sioux City & Pacific R. R. 4-8½ g. 427 m. 21 lo. 594 c.
P. E. Hall, *Gen. Man. & P. A*.Cedar Rapids, Ia.
J. S. Wattles, *Supt*...Missouri Valley, Ia.
C. F. McCoy, *Asst. Supt*...Blair, Neb.
S. A. Teal, *M. M*...Missouri Valley, Ia.
W. H. Ramseyer, *M. C. B.* do.
South Carolina Ry. 5 g. 243 m. 42 lo. 685 cars.
John B. Peck, *Gen. Man*...Charleston, S. C.
S. B. Pickens, *Pur. Agt*...Charleston, S. C.
P. J. Cochrane, *Mast. of Mach*.Charleston, S. C.
Geo. H. Gramling, *M. C. B*...Charleston, S. C.
South-Eastern Ry. 4-8½ g. 161 m. 14 lo. 446 cars.
Bradley Barlow, *Gen. Man*...St. Albans, Vt.
P. A. McKinnon, *Supt*...Richford, Vt.
A. G. Eastman, *M. M*...Richford, Vt.
South Florida R. R. 3 gauge 40 m. 4 lo. 20 cars.
B. R. Swoope, *Supt. & P. A*...Sanford, Fla.
C. C. Haskell, *Pur. Agt*...Sanford, Fla.
J. A. Campbell, *M. M*...Sanford, Fla.
A. D. Stentiford, *M. C. B*...Sanford, Fla.
South Mountain R. R. 4-8½ g. 18 m. 4 lo. 22 c.
W. H. Woodward, *Supt*. Pine G've Furnace, Pa.
South Pacific Coast R. R. 3 g. 81 m. 10 lo. 260 cars.
A. H. Fracker, *Gen. Supt*..San Francisco, Cal.
G. H. Waggoner, *Pur. Agt*..San Francisco, Cal.
E. L. Reese, *M. M. & C. B*...Newark, Cal.
South-Western R. R. (Ga.) *(See Central of Ga.)*
South-Western Ry. (Ky.) 4-8½ g. 4 m. 1 lo. 38 cars.
J. M. Wilson, *Supt*...Harrodsburg, Ky.
J. Tomlinson, *Pur. Agt*...Harrodsburg, Ky.
Southern Central R. R. 4-8½ g. 114 m. 16 lo. 447 c.
James G. Knapp, *Supt*...Auburn, N. Y.
H. D. Titus, *Pur. Agt*...Auburn, N. Y.
Chas. G. Brown, *M. M*...Auburn, N. Y.
H. Mooney, *M. C. B*...Auburn, N. Y.
Southern Maryland R. R. 4-9 g. 47 m.
Shields Burr, *Supt*...Brandywine, Md.
C. J. Royce, *M. M*...Brandywine, Md.
Southern Pacific R. R. 4-8½ g. 161 m. 29 lo. 728 c.
Northern Div. *(For other Divs. see Cen. Pac.)*
A. C. Bassett, *Supt*...San Francisco, Cal.
J. R. Watson, *Pur. Agt*...Sacramento, Cal.
J. T. Wilson, *M. M*...San Francisco, Cal.
F. N. Bellisle, *M. C. B*...San Francisco, Cal.
Springfield, Effingham & So.-Eastern and
Bloomfield Rys. 3 g. 89 m.
W. C. Lyon, *Gen. Man*...Robinson, Ill.
E. Pratt Buell, *Pur. Agt*...Effingham, Ill.
J. S. Pickering, *M. M. & C. B*...Effingham, Ill.

Spring Hill & Parrsboro Ry. 4-8½ g. 32 m. 1 lo. 64 c.
J. Killam, *Supt*...Parrsboro, N. S.
K. McKinnon, *M. M*...Parrsboro, N. S.
St. Croix & Penobscot R. R. 4-8½ g. 22 m. 4 lo. 195 c.
S. W. Haycock, *Supt. & Pur. Agt*...Calais, Me.
G. H. Corsen, *M. M*...Milltown, Me.
H. C. Tincker, *M. C. B*...Milltown, Me.
St. John & Maine Ry. 4-8½ g. 92 m. 6 lo. 110 cars.
H. D. McLeod, *Supt. & P. Agt*...St. John, N. B.
A. McIntyre, *M. M*...St. John, N. B.
St. John's Ry. 4-8½ g. 14½ m. 2 lo. 24 cars.
R. McLaughlin, *Pr. & Supt*. Jacksonville, Fla.
Geo. Ferro, *M. of Mach*...Tocoi, Fla.
St. Johnsb'ry & Lake Champ 4-8½ g. 120 m. 10 lo. 197 c.
A. B. Jewett, *Supt. & P. A*..St. Johnsbury, Vt.
Geo. E. Howe, *M. M. & C. B*.St. Johnsbury, Vt.
St. Joseph & Des Moines R. R. *(See K. C., St. J. & C. B.)*
St. Lawrence & Ottawa Ry. 4-8½ g. 59 m. 10 l. 146 c.
Archer Baker, *Gen. Supt*...Ottawa, Can.
alvin Dame, *M. M. & C. B*...Prescott, Can.
St. Louis, Alton & Terre Haute R. R.
Main Line. *(See Ind. & St. L. Div.: Ohio Ry.)*
St. Louis & Cairo Div.: 4-8½ g. 123 m. 16 lo. 778 c.
G. W. Parker, *Gen. Man*...St. Louis, Mo.
J. L. Hinckley, *Supt*...Belleville, Ill.
A. M. De Clerq, *M. M*...St. Louis, Mo.
St. Louis Bridge Co. and Tunnel R. R.
4-8½ g. 17 m. 15 lo. 11 cars.
Wm. Taussig, *Gen. Man*...St. Louis, Mo.
A. W. Dickinson, *Supt*...St. Louis, Mo.
J. E. Williams, Jr., *Pur. Agt*...St. Louis, Mo.
H. M. Smith, *M. M*...St. Louis, Mo.
St. Louis Coal R. R. 4-8½ g. 28 m. 1 lo. 78 cars.
Jas. Prentice, *Supt*...Carbondale, Ill.
Jas. C. Bryden, *Pur. Agt*...St. Louis, Mo.
St. Louis, Ft. Scott & Wichita R. R. 4-8½ g. 20 miles.
F. Tiernan, *V. P. & Gen. Man*..Fort Scott, Kan.
J. D. Hill, *Gen. Supt*...Fort Scott, Kan.
S. C. Young, *M. M*...Ft. Scott, Kan.
A. A. Lydell, *M. C. B*...Ft. Scott, Kan.
St. L., Hannibal & Keokuk. 4-8½ g. 59 m. 1 lo. 23 c.
W. W. Walker, *Supt*...Hannibal, Mo.
Geo. Douglass, *Pur. Agt*...Hannibal, Mo.
St. Louis, Iron Mountain & Southern Ry. (1);
International & Great Northern R. R. (2); and
Texas & Pacific Ry. (3).
4-8½ g. 2,678 m. 302 lo. 6,119 cars.
H. M. Hoxie, *Gen. Man*...St. Louis, Mo.
R. B. Lyle, *Gen. Pur. Agt*...St. Louis, Mo.
(1) St. L., I. Mt. & So. 4-8½ g. 710 m. 137 lo. 4,081 c.
Wm. Kerrigan, *Supt*...St. Louis, Mo.
O. A. Haynes, *Supt. Mach*...De Soto, Mo.
Oscar Doolittle, *M. C. B*...St. Louis, Mo.
St. Louis Div.: J. J. Frey, *Supt*...St. Louis, Mo.
W. H. Harris, *M. M*...De Soto, Mo.
Ark. Div.: Wm. Kerrigan, *Supt*. Little Rock, Ark.
R. M. Richardson, *M. M. & C. B* do.
(2) Inter. & Gr't No'n R. R. 4-8½ g. 776 m. 45 lo 932 c.
Jos. Herrin, *Supt*...Palestine, Tex.
R. H. Johnson, *M. M*...Palestine, Tex.
H. H. Sessions, *M. C. B*...Palestine, Tex.
(3) Texas & Pac. Ry. 4-8½ g. 1,030 m. 120 lo. 1,106 c.
E. L. Dudley, *Supt*...Marshall, Tex.
J. F. Sechler, *Gen. M. M*...Marshall, Tex.
H. H. Sessions, *M. C. B*...Marshall, Tex.
So'n Div.: Hugh Irvine, *Supt*...Longview, Tex.
W. Garrison, *M. M*...Marshall, Tex.
Tr. Con. Div.: J. L. Thorn, *Supt*. Texarkana, Ark.
Wilson Garrison, *M. M*...Texarkana, Ark.
W'n Div.: Wm. Davis, *Supt*...Ft. Worth, Tex.
W. H. Reilly, *Asst. G. M. M*. Fort Worth, Tex.
St. L. Keokuk & No.-W'n. 4-8½ g. 187 m. 14 lo 312 c.
J. W. Smith, *Gen. Supt. & P. Agt*...Keokuk, Ia.
Wm. H. Bartlett, *M. M*...Keokuk, Ia.
St. L., Salem & Little Rock. 4-9 g. 69 m. 5 lo. 103 c.
H. A. Crawford, *V. Pr. & P. A*...St. Louis, Mo.
E. B. Sankey, *Supt*...Salem, Mo.
Thomas Everson, *M. M*...Steelville, Mo.
J. W. Houston, *M. C. B*...Steelville, Mo.
St. L., Van. & T. H. *(See T. H. & I. Div. of Penna. Co.)*
St. Louis & Cairo R. R. 3 g. 146 m. 22 lo. 708 cars.
Chas. Hamilton, *Gen. Supt*...St. Louis, Mo.
R. M. Pringle, *M. M*...East Carondelet, Ill.
St. L. & San Fran. Ry. 4-8½ g. 695 m. 71 lo. 2,490 c.
C. W. Rogers, *2d V. Pr. & G. Man*..St. Louis, Mo.
D. H. Nichols, *Mast. Tran*..No. Springfield, Mo.
A. G. Thompson, *Pur. Agt*...St. Louis, Mo.
M. Kearney, *M. M. & C. B*...St. Louis, Mo.
Mo. & Ark. Div.: W. A. Thoms, *Supt*. do.
Kan. Div.: J. R. Wentworth, *Supt*.Neodesha, Kan.
St. Martin's & Upham Ry. 4-8½ g. 30 m. 1 lo.
A. E. Killam, *Manager*...St. Martin's, N. B.
St. Paul, Minneapolis & Manitoba Ry.
4-8½ g. 1,050 m. 116 lo. 3,116 cars.
A. Manvel, *Gen. Man*...St. Paul, Minn.
S. R. Stimson, *Gen. Supt*...St. Paul, Minn.
E. B. Wakeman, *Supt. Trans*...St. Paul, Minn.
J. C. Morrison, *Pur. Agt*...St. Paul, Minn.
H. Middleton, *M. M. & C. B*...St. Paul, Minn.
Breck. Div.: A. Guthrie, *Supt*...St. Paul, Minn.
F. F. Div.: J. B. Rice, *Supt*...St. Paul, Minn.
No'n Div.: D. K. Smith, *Supt*...Crookston, Minn.
St. Paul & Duluth R. R. 4-8½ g. 196 m. 24 lo. 580 c.
S. R. Stimson, *Gen. Supt*...St. Paul, Minn.
J. G. Callahan, *Pur. Agt*...St. Paul, Minn.
W. McFarland, *M. M*...St. Paul, Minn.
John Hill, *M. C. B*...St. Paul, Minn.
Sterling Mountain Ry. 6 g. 8 m. 2 lo. 145 cars.
J. C. Missimer, *Supt*...Sloatsburg, N. Y.
Syracuse, Binghamton & N. Y. R. R. *(See D. L. & W.)*
Syracuse, Chenago & N. Y. 4-8½ g. 44 m. 4 lo. 60 c.
Albert Allen, *Supt*...Syracuse, N. Y.
George W. West, *M. M*...Syracuse, N. Y.
Wm. J. McMichael, *M. C. B*...Syracuse, N. Y.
Syracuse, Geneva & Corning; Corning, Cowanasque
& Antrim R. Rs. 4-8½ g. 121 m. 23 lo. 1,044 c.
A. H. Gorton, *Supt*...Corning, N. Y.
Andrew Beers, *Pur. Agt*...Corning, N. Y.
O. C. Patchell, *M. M*...Corning, N. Y.
C. J. Butler, *M. C. B*...Corning, N. Y.

T

Terre Haute & So.-Eastern Ry. 4-9 g. 40 miles.
Geo. Atherton, *Supt*...Terre Haute, Ind.
Texas-Mexican; and Mexican National Rys.
3 g. 333 m. 28 lo. 600 cars.
G. C. Gardner, *Gen. Man*...New York, N. Y.
J. Dougherty, *Pur. Agt*...New York, N. Y.
S. T. Fuller, *Gen. Supt*...Corpus Christi, Tex.
P. J. Milan, *M. M. & C. B.* do.
Mex. Nat. Ry.: J. C. Monroe, *M. M*..Mexico, Mex.
Texas Western Ry. 3 g. 42 m. 2 lo. 34 cars.
J. W. Goodwin, *Supt*...Houston, Tex.
T. F. Glispin, *M. M*...Houston, Tex.

Texas & New Orleans; Louisiana W'n R. Rs.
4-8½ g. 217 m. 25 lo. 900 c.
J. F. Crosby, *Gen. Man*...Houston, Tex.
P. B. Watson, *Pur. Agt*...Houston, Tex.
C. A. Burton, *Supt*...Houston, Tex.
D. C. Smith, *M. M*...Houston, Tex.
J. M. Mather, *M. C. B*...Houston, Tex.
Texas & St. Louis Ry. 3 g. 258 m. 15 lo. 280 cars.
J. B. Van Dyne, *Gen. Supt*...Tyler, Tex.
F. W. Paramore, *Pur. Agt*...St. Louis, Mo.
L. B. Fisher, *Pur. Agt*...Tyler, Texas.
W. J. Lewis, *M. M*...Tyler, Tex.
Tioga and Elmira State Line R. Rs.
4-8½ and 6 g. 54 m. 17 lo. 953 cars.
L. H. Shattuck, *Supt*...Blossburg, Pa.
James A. Drake, *Pur. Agt*...Elmira, N. Y.
Pere Bonny, *M. M*...Blossburg, Pa.
D. H. Stratton, *M. C. B*...Blossburg, Pa.
Toledo, Ann Ar. & Gr. Tr. Ry. 4-8½ g. 84 m. 7 lo. 107 c.
M. D. Woodford, *Gen. Man*...Ann Arbor, Mich.
H. W. Ashley, *Supt. & Pur. Agt.* do.
C. C. Dodge, *M. M*...Ann Arbor, Mich.
Toledo, Cin. & St. Louis R. R. 3 g. 465 m. 63 lo. 2,200 c.
T. A. Phillips, *Gen. Man*...Toledo, O.
J. H. F. Wiers, *Supt. Mach. & P. Agt* Toledo, O.
Toledo Div.: A. M. Matheany, *Supt.*; and
A. D. Stewart, *M. M*...Delphos, O.
C. H. Mead, *Gen. M. C. B*...Delphos, O.
S.-E'n & Dayton Div.: R. B. Jones, *Supt*. Dayton, O.
J. T. Wright, *M. M*...Dayton, O.
Tonawanda Valley R. R. 3 g. 19 m. 1 lo. 13 cars.
J. V. D. Loomis, *Supt*...Attica, N. Y.
Toronto, Grey & Bruce Ry. 4-8½ g. 191 m 20 lo 446 c.
Edmund Wragge, *Gen. Man*...Toronto, Can.
W. Watson, *Pur. Agt*...Toronto, Can.
David Preston, *M. M*...Toronto, Can.
Troy & Boston R. R. 4-8½ g. 48 m. 20 lo. 484 cars.
D. Robinson, *Pres. & Pur. Agt*...Troy, N. Y.
Joseph Crandell, *Supt*...Troy, N. Y.
Z. B. Davis, *M. M*...Troy, N. Y.
R. V. Coon, *M. C. B*...Troy, N. Y.
Tuckerton R. R. 4-8½ g. 31 m. 2 lo. 28 cars.
J. J. Pharo, *Supt*...Tuckerton, N. J.

U

Ulster & Delaware R. R. 4-8½ g. 74 m. 7 lo. 142 cars.
Jas. H. Jones, *Supt*...Rondout, N. Y.
Geo. W. Wright, *M. M*...Rondout, N. Y.
John H. Decker, *M. C. B*...Rondout, N. Y.
Union Pacific Ry. (4 Gen. Divs.)
3 & 4-8½ g. 4,270 m. 318 lo. 6,157 cars.
S. H. H. Clark, *Gen. Man*...Omaha, Neb.
Thos. L. Kimball, *Asst. Gen Man*.Omaha, Neb.
A. D. Clarke, *Pur. Agt*...Omaha, Neb.
(1) Union Div.: *Gen. Supt*...Omaha, Neb.
I. H. Congdon, *Gen. M. M*...Omaha, Neb.
Geo. E. Stevens, *Supt. Car Dept*. Omaha, Neb.
East. Divs.: P. J. Nichols, *Supt*...Omaha, Neb.
Robt. McConnell, *M. M*...Omaha, Neb.
A. M. Collett, *M. C. B*...Omaha, Neb.
Jas. H. McConnell, *M. M*...No. Platte, Neb.
A. Reis, *For. Car. Sh*...No. Platte, Neb.
Mtn. Div.: Robt. Law, *Supt*...Cheyenne, Wy. T.
T. A. Davies, *M. M*...Cheyenne, Wy. T.
J. E. Davies, *For. Car. Sh*..Cheyenne, Wy. T.
Lar. Div.: E. Dickinson, *Supt*...Laramie, Wy. T.
R. Galbraith, *M. M*...Laramie, Wy. T.
R. M. Galbraith, *M. M*...Rawlins, Wy. T.
Frank Blake, *For. Car. Sh*...Rawlins, Wy. T.
West. Div.: W. B. Doddridge, *Supt*.Evanston, Wy. T.
C. C. Quinn, *M. M*...Evanston, Wy. T.
R. V. Brinkley, *For. Car. Sh*.Evanston, Wy. T.
Utah Nor. Div.: G. W. Thatcher, *Supt*., Logan, U.
R. Craft, *M. M*...Logan, U.
F. Reardon, *M. M*...Eagle Rock, Idaho.
F. M. Shoemaker, *For. Car. Sh*.Eagle R'k, Ida.
Col. Div.: A. A. Egbert, *Supt*...Denver, Col.
Fred. Metzheimer, *M. M*...Golden, Col.
E. G. Thomas, *For. Car. Sh*...Golden, Col.
St. J. & W'n. Rd.: L. D. Tuthill, *Supt*. St. Joseph, Mo.
E. Sleppy, *M. M*...Grand Island, Neb.
E. Hansen, *For. Car. Sh*...Elwood, Kan.
(2) Kansas Div.: S. T. Smith, *G. Supt*. Kansas C'y, Mo.
Jno. Mackenzie, *Supt. Mach*. Armstrong, Kan.
T. B. Roberts, *M. C. B*...Armstrong, Kan.
K. Val. Div.: J. O. Brinkerhoff, *Supt*. Kan. C'y, Mo.
Jas. Mackenzie, *M. M*...Armstrong, Kan.
Smoky Hill & Denver Divs.:
O. H. Dorrance, *Supt*...Wallace, Kan.
J. B. Dailey, *M. M*. (S. H. Div.)...Ellis, Kan.
Chey. Div.: A. A. Egbert, *Supt*...Denver, Col.
R. McDougall, *M. M*. (D. & C. Divs.) Denver, Col.
W. Ogle, *For. Car. Sh*. (D. & C. Divs.) do.
Kan. Cen. Div.: 3 g. 150 miles.
W. J. Kelley, *Supt*...Leavenworth, Kan.
And. Goldthwaite, *M. M*..Leavenworth, Kan.
J. P. Newman, *M. C. B*. Leavenworth, Kan.
(3) Denver & South Park Div. 3 ft. gauge 227 miles.
C. W. Fisher, *Gen. Supt*...Denver, Col.
J. H. Kirk, *M. M*...Denver, Col.
(4) Nevada Central Ry. 3 g. 93 m. 5 lo. 82 cars.
F. W. Dunn, *Supt*...Battle Mountain, Nev.
Z. T. Spriggs, *M. M*...Battle Mountain, Nev.
United States Rolling Stock Co. 23 lo. 4,834 cars.
A. Hegewisch, *Pres*...New York, N. Y.
C. F. Jauriet, *Gen. M. M. & P. A*..Chicago, Ill.
Utah Central Ry. 4-8½ g. 280 m.
John Sharp, *Gen. Supt*...Salt Lake City, Utah.
S. H. Hill, *Pur. Agt*...Salt Lake City, Utah.
W. B. Armstrong, *M. M*..Salt Lake City, Utah.
Peter Reid, *M. C. B*...Salt Lake City, Utah.
Utah & Nevada Ry. 3 g. 37 m.
W. W. Ritter, *Gen. Man*...Salt Lake City, Utah.
Robert Anderson, *M. M*...Salt Lake City, Utah.
Utah & Pleasant Valley Ry. 60 m.
G. M. Young, *Man*...Salt Lake City, Utah.
Utica, Ithaca & Elmira Ry. 4-8½ g. 127 m. 11 lo. 152 c.
G. Jas. Rice, *Pres & Supt*. Horse Heads, N. Y.
J. L. Greatsinger, *Pur. Agt*...Breesport, N. Y.
Geo. W. Cleveland, *M. M*...Breesport, N. Y.
Wm. Ells, *M. C. B*...Breesport, N. Y.
Utica, & Black Riv. R. R. 4-8½ g. 180 m. 22 lo. 329 c.
J. F. Maynard, *Gen. Supt. & P. A*..Utica, N. Y.
John Bailey, *M. M*...Utica, N. Y.
David James, *M. C. B*...Utica, N. Y.

V

Vaca Vall. & Clear Lake R. R. 4-8½ g. 30 m. 2 lo. 19 c.
G. B. Stevenson, *Gen. Supt*...Vacaville, Cal.
Valley Ry. 4-8¾ g. 59 m. 10 lo. 317 cars.
Samuel Briggs, *Supt*...Cleveland, O.
B. C. Bosworth, *M. M*...Cleveland, O.
Chas. Blanchard, *M. C. B*...Cleveland, O.
Vernon, Greensburg & Rushville R. R. 25 m.
Horace Scott, *V.-Pres*...Greensburg, Ind.
Virginia Midland Ry. *(See Rich. & Dan.)*

Virginia & Truckee R. R. 4-8½ g. 54 m. 17 lo. 375 c.
Carson & Colorado R. R. 3 g. 150 m. 4 lo. 76 c.
H. M. Yerington, *Gen. Supt*...Carson, Nev.
R. J. Laws, *Supt*. (C. & Co.)...Carson, Nev.
C. P. Mason, *Pur. Agt*...Carson, Nev.
I. N. Fording, *M. M*...Carson, Nev.
B. F. Lyon, *M. C. B*...Carson, Nev.

W

Wabash, Chester & W'n R. R. 4-8½ g. 42 m. 2 lo. 32 c.
J. L. Hinckley, *Gen. Supt*...Chester, Ill.
Wabash, St. Louis & Pacific Ry. (3 Gen. Divs.)
4-8½ g. 3,241 m. 559 lo. 17,230 cars.
John C. Gault, *Gen. Traffic Man*.St. Louis, Mo.
Robert Andrews, *Gen. Supt*...St. Louis, Mo.
Asst. Gen. Supt...St. Louis, Mo.
R. W. Green, *Pur. Agt*...St. Louis, Mo.
Jacob Johann, *Gen. M. M*...Springfield, Ill.
U. H. Kohler, *Gen. M. C. B*...Toledo, O.
(1) Eas'n Div.: J. B. Barnes, *M. M*. Fort Wayne, Ind.
U. H. Kohler, *Gen. M. C. B*...Toledo, O.
G. W. Stevens, *Supt*...Fort Wayne, Ind.
Ohio & Ind. Div.:
Peru Div.: E. C. Murphy, *Supt*...Peru, Ind.
John McKenna, *M. M*...Peru, Ind.
Cairo Div.: D. G. Moore, *Supt*...Cairo, Ill.
A. Van Tuyl, *M. M*...Carmi, Ill.
(2) Middle Div.: J. Johann, *Gen. M. M*. Springfield, Ill.
R. M. Hemphill, *M. C. B*...Peoria, Ill.
Ill. Div.: H. F. Clark, *Supt*...Springfield, Ill.
B. B. Rose, *M. C. B*...Decatur, Ill.
Chicago Div.: A. A. Hobart, *Supt*...Chicago, Ill.
Peoria Div.: F. L. Tomkins, *Supt*...Peoria, Ill.
Wm. O. Hewitt, *M. M*...Peoria, Ill.
Rant'l Div.: B. F. Mathias, *Supt*...Rantoul, Ill.
J. McCarthy, *M. M*...Rantoul, Ill.
(3) Western Div.: W. H. Selby, *M. M*...Moberly, Mo.
C. S. Buck, *M. C. B*...Moberly, Mo.
Missouri Div.: R. S. Miner, *Supt*...Moberly, Mo.
C. B. & O. Div.: J. W. Blanchard, *Supt.*; and
J. S. Hazen, *M. C. B*...Stanberry, Mo.
Quincy Div.: F. D. Schermerhorn, *S*..Quincy, Ill.
Iowa Div.: E. N. Armstrong, *Supt*...Keokuk, Ia.
D. Moin. Div.: H. B. Skeele, *Supt*..Des Moines, Ia.
Walla Walla & Columbia Riv. R. R. *(See Ore. Ry.,*
Walkill Ry. 4-8½ g. 117 m. 9 lo. 169 cars.
G. H. Graves, *Supt*...Rondout, N. Y.
J. B. Dykeman, *M. M*...Rondout, N. Y.
John H. Decker, *M. C. B*...Rondout, N. Y.
Warwick Valley R. R. 4-8½ g. 28 m. 2 lo. 18 cars.
Grinnell Burt, *Pres. & Pur. Agt*. Warwick, N. Y.
S. Mills, *M. M*...Warwick, N. Y.
Washington & Western R. R. 4-8½ g. 52 m. 5 lo. 83 c.
R. H. Havener, *Gen. Supt*...Alexandria, Va.
Edward Dunn, *M. M*...Alexandria, Va.
John Harrison, *M. C. B*...Alexandria, Va.
Waynesburg & Washington Rd. 3 g. 28 m. 3 lo. 15 c.
J. G. Ritchie, *Supt*...Waynesburg, Pa.
G. E. Huggins, *M. C. B*...Waynesburg, Pa.
Welland Ry. 4-8½ g. 25 m. 3 lo. 147 cars.
William Pay, *Supt*...St. Catharines, Ont.
Jas. Taylor, *M. M*...St. Catharines, Ont.
Wm. H. Pay, *M. C. B*...St. Catharines, Ont.
West End Narrow Gauge Ry. 3 g. 16 m.
Rolla Wells, *Supt*...St. Louis, Mo.
M. M. Hodgman, *M. M*...Florissant, Mo.
West Feliciana R. R. 4-8½ g. 27 m. 2 lo. 22 cars.
J. B. McGehee, *Pr. & Gen. Supt*. Bayou Sara, La.
J. A. Tilton, *M. M. & C. B*...Bayou Sara, La.
West Virginia, Central & Pittsb'g Ry. 13 m. 3 lo. 19 c.
W. E. Porter, *Gen. Supt*...Piedmont, W. Va.
W. T. Blackiston, *Pur. Agt*...Piedmont, W. Va.
E. W. Lippencott, *M. M. & M. C. B*..Piedmont.
Western R. R. (of Ala.) 5 g. 88 m. 15 lo. 270 cars.
Atlanta & W. Point Rd. 5 g. 87 m. 14 lo. 20 c.
Cecil Gabbett, *Gen. Man. & Supt*...Mont., Ala.
Robert King, *M. M*...Montgomery, Ala.
F. M. Wade, *M. C. B*...Montgomery, Ala.
Western Counties' Ry. 4-8½ g. 67 m. 8 lo. 137 cars.
J. Brignell, *Supt*...Yarmouth, N. S.
Western Maryland R. R. 4-8½ g. 157 m. 16 lo. 394 c.
J. M. Hood, *Pr. & Gen. Man*...Baltimore, Md.
R. J. Adair, *Pur. Agt*...Baltimore, Md.
David Holtz, *Mast. of Mach*. Union Bridge, Md.
J. H. Nussear, *M. C. B*...Union Bridge, Md.
Western No. Carolina R. R. 4-8½ g. 155 m. 6 lo. 36 c.
V. E. McBee, *Supt*...Salisbury, N. C.
Geo. P. Erwin, *Pur. Agt*...Salisbury, N. C.
G. W. Gates, *M. M*...Salisbury, N. C.
Western & Atlantic R. R. 5 g. 138 m. 48 lo. 952 c.
R. A. Anderson, *Gen. Supt*...Atlanta, Ga.
W. R. Webster, *Pur. Agt*...Atlanta, Ga.
John H. Flynn, *M. M*...Atlanta, Ga.
Jno. H. Flynn, *M. C. B. & M. C. B*..Atlanta, Ga.
Wheeling & Lake Erie R. R. 143 miles.
J. S. Oliver, *Gen. Man. & Supt*...Norwalk, O.
L. James, *Supt. Mach. & Car Dept*. do.
White Water R. R. *(See Ft. W., Cin. & Lou.)*
Wilmington & No'n R. R. 4-8¾ g. 77 m. 13 lo. 148 c.
J. H. Thompson, *Supt. & P. A*..Coatesville, Pa.
George Rommel, *M. M*...Coatesville, Pa.
Alex. Maitland, *M. C. B*...Coatesville, Pa.
Wilmington & Weldon; Northeastern; S. C. Central;
Cheraw & Darlington; Cheraw & Salisbury; and
Wilmington, Columbia & Augusta R. Rs.
5 g. 599 miles 70 locomotives 1,120 cars.
R. R. Bridgers, *Gen. Man*...Wilmington, N. C.
J. F. Divine, *Gen. Supt*...Wilmington, N. C.
John Bisset, *M. M*...Wilmington, N. C.
W. H. Day, *M. C. B*...Florence, S. C.
C. R. Clowe, *M. C. B*. (W. & W.). Wilmington, N. C.
Windsor & Annapolis Ry. 4-8½ g. 130 m. 10 lo. 156 c.
P. Innes, *Gen. Man*...Kentville, N. S.
Wm. Yould, *M. M*...Kentville, N. S.
Wm. Grierson, *M. C. B*...Kentville, N. S.
Wisconsin Central R. R. 4-8½ g. 480 m. 31 lo. 783 c.
F. N. Finney, *Gen. Man*...Milwaukee, Wis.
J. W. Curtis, *Pur. Agt*...Milwaukee, Wis.
J. B. Henney, *Supt. M. P. & M*. Stevens Pt., Wis.
Mil. & E'n Divs.: A. A. Allen, *S*. Milwaukee, Wis.
W. & No. Div.: G. Campbell, *S*. Stevens Point, Wis.
Worcester & Nashua; and Nashua & Rochester R. Rs.
4-8½ g. 95 m. 26 lo. 505 cars.
C. S. Turner, *Pres. & G. Man*. Worcester, Mass.
G. W. Hurlburt, *Supt*...Worcester, Mass.
John G. Brady, *M. M. & C. B*. Worcester, Mass.
Worcester & Shrewsbury R. R. 3 g. 3 miles.
Worcester & Somerset R. R. 4-8½ g. 10 m. 1 lo. 4 c.
J. J. Coburn, *Supt*...Worcester, Mass.
G. E. Hapgood, *Pur. Agt*...Worcester, Mass.
Chas. Cleveland, *M. M*...Worcester, Mass.

Y

Youghiogheny R. R. 4-9 gauge
Wm. Wilson, *Supt*...Irwin's, Pa.